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THE ALBERTA JOURNAL OF EDUCATIONAL RESEARCH

VOLUME XXX NUMBER 3 SEPTEMBER 1984

PUBLISHED BY
THE UNIVERSITY OF ALBERTA • EDMONTON

THE ALBERTA JOURNAL OF EDUCATIONAL RESEARCH

Published in March, June, September, December by the
Faculty of Education, The University of Alberta

A quarterly journal devoted to the dissemination, criticism, interpretation and encouragement of all forms of systematic enquiry into education and fields related to or associated with education.

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AJER gratefully acknowledges support from the Social Sciences and Humanities Research Council of Canada and from the Alberta Advisory Committee for Educational Studies.

AJER is indexed in the *Canadian Education Index, Current Contents/Social and Behavioral Sciences, Social Science Citation Index, ERIC/Current Index to Journals in Education,* and *Alberta Education Index*; appropriate articles are abstracted in *Educational Administration Abstracts, Psychological Abstracts, Sociology of Education Abstracts, Language Behavior Abstracts, Cognitive Development Abstracts, Research into Higher Education Abstracts, School Organization and Management Abstracts,* and *Multicultural Education Abstracts.*

The subscription rate is $12.00 per year; single copies are $3.50 each. Please make cheques payable to *The Alberta Journal of Educational Research.* All back issues are available; rates supplied on request. Claims for undelivered copies must be received within three months of publication.

Address all communications and manuscript submissions to *The Alberta Journal of Educational Research,* Faculty of Education, Publication Services, 4-116 Education North, The University of Alberta, Edmonton, Canada, T6G 2G5.

SECOND CLASS MAIL REGISTRATION NUMBER 1436

ISSN 0002-4805

The Alberta Journal of Educational Research

Volume XXX, Number 3 *September, 1984*

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FACULTY OF EDUCATION
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ANNOUNCEMENT

As of September 1, 1984, the Editor of *The Alberta Journal of Educational Research* will be Dr. Walter H. Worth, replacing interim editor, Dr. C. S. Bumbarger.

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Examples of technical contributions include, but are not limited to, innovative ways of solving practical or theoretical measurement problems, inventive instrument development techniques, creative testing procedures or products, and scientific contributions to measurement research methodology. Selection criteria are quality, innovativeness, and positive impact of the technology on the field of educational measurement.

The award will be presented at the NCME's 1985 annual meeting in Chicago.

The Alberta Journal of Educational Research *Vol. XXX, No. 3, September, 1984, 157-170*

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Factors Contributing to the Job Satisfaction of School Principals

Job satisfaction studies have focused primarily on production workers rather than on administrators. This article examines the job satisfaction of 410 school principals in Alberta. Overall and facet satisfaction of these principals are examined and related to current theories and previous findings. Eight satisfaction factors were identified through factor analysis. Regression analysis showed that the three factors contributing most to the overall satisfaction of the school principals were Responsibility and Autonomy, Principal-Teacher Work Involvement, and Liaison at District Level. Rapport with Students, Resource Adequacy, and Salary and Benefits did not contribute significantly to the overall job satisfaction of the principals.

Job satisfaction has been studied in different kinds of organizations using a number of different approaches. According to Locke (1976, p. 1297), 3,350 articles or dissertations appeared on the subject from 1958 to 1976. The common objective of these studies has been to identify those facets in the work situation which are related to satisfaction on the assumption that increased satisfaction leads to better performance on the job. An extensive body of literature since 1976 indicates continuing interest in this area.

Dr. Friesen is Professor of Educational Administration at the University of Alberta. He has conducted research in such areas as occupational stress, job satisfaction, student subcultures and comparative educational administration.

Dr. Holdaway is Professor of Educational Administration and Director of the Office of Institutional Research and Planning at the University of Alberta. His research interests include satisfaction of educators, the organization of educational research, the research-policy relationship, and organizational analysis.

Dr. Rice has recently been appointed Deputy Principal, Prairiewood High School, N.S.W. He has had extensive experience in the administration of in-service education and curriculum services with the Department of Education, New South Wales, Australia.

Most of these studies have explored the satisfaction which production workers experience in their jobs, and have sought to identify the facets which are related to their overall satisfaction. Until recently, only a few studies have examined the facets that are related to job satisfaction of administrators. The importance of job satisfaction to administrators, as compared with production workers, can be viewed from two perspectives. One is related to the administrators' role of increasing job satisfaction for their subordinates. The other, which has received much less attention, has to do with the ways that administrators achieve satisfaction for themselves in the work situation. The study on which this paper is based sought information on this second theme with the problem being: What aspects of the work situation appear to contribute substantially to the job satisfaction of school administrators?

Theoretical Considerations

The traditional interpretation of job satisfaction is that it arises out of all the feelings that individuals have about their work (Hoy & Miskel, 1982, p. 339). Where the sum of the satisfaction of such things as pay, the job itself, and advancement opportunities gives rise to feelings of satisfaction, the individual is said to be satisfied with the job. Where this total leads to dissatisfaction, the individual is seen as dissatisfied with the job. Expectancy theory extended this traditional interpretation by pointing out that an individual's expectations of the job are also important determinants of job satisfaction (Vroom, 1964; Miner, 1980, pp. 135-137). For example, when an individual has a high expectation for advancement, failure of a job to meet this expectation will lead to dissatisfaction.

Gruneberg (1976, p. xi) argued that "those proposing an expectancy theory usually regard overall job satisfaction as a function of satisfaction with the various elements of the job." He further stated that the Hygiene/Motivation theory developed by Herzberg (Herzberg, Mausner, and Snyderman, 1959) views factors causing satisfaction and dissatisfaction as arising from separate and distinct causes. The factors that contribute to job satisfaction are seen by Gruneberg to "include the intrinsic nature of the job and achievement" (p. xi).

A great deal of controversy still surrounds the appropriateness and applicability of Herzberg's Hygiene/Motivation Theory, much of which centers on Herzberg's choice of method in identifying peak experiences related to satisfaction or dissatisfaction, and on confusion resulting from his use of the term "motivators" as being synonymous with "satisfiers." Gruneberg, for example, made this observation:

> Herzberg's work has come in for severe criticism recently from a number of sources. In particular a number of studies appear to show that the same factors can cause both satisfaction and dissatisfaction. Others, such as Schneider and Locke (1971), are critical of the methodology employed by Herzberg. Nevertheless there is little disagreement among theorists on the importance of the job itself as a major factor in job satisfaction for most individuals, and to this extent at least Herzberg's influence has been immense. (Gruneberg, 1976, p. xi)

Miner (1980, p. 102) reviewed the assessments of the Motivation/Hygiene Theory and concluded that it has had a "tremendous appeal . . . for practicing managers over the past 15 or 20 years" but that it has failed to "receive the support needed to confirm it, in spite of an extended period of testing and a great deal of research" (p. 103). He admitted that a "new thrust in research might . . . yield different conclusions" (p. 103). In this study, no attempt was made to resolve these difficulties.

Relationship Between Overall Satisfaction and Facet Satisfaction

Theorists such as Lawler (1973) and Locke (1969) have conceptualized a relationship between overall job satisfaction and satisfaction with specific facets of the job. Locke (1969, p. 330) described overall job satisfaction as "the sum of the evaluations of the discriminable elements of which the job is composed." Each facet or aspect of the job contributes differentially to overall job satisfaction. According to both Locke and Lawler, those aspects perceived by individuals to be more important to them contribute more to their overall job satisfaction than those aspects perceived by them to be less important.

In addition to this conceptual debate, methodological considerations have arisen in measuring overall job satisfaction. These concern the issue of using a summed measure of overall satisfaction versus a single measure. Locke (1969, p. 331) suggested that one approach is to sum the measures of satisfaction with specific job aspects. Wanous and Lawler (1972) investigated nine different techniques used for combining measures to assess overall job satisfaction. The validity of calculating overall job satisfaction by such combining was, however, questioned by Van Maanen and Katz (1976). On the basis of their findings, they contended that there may be occasions when overall job satisfaction would not be consistent with a summed measure of satisfaction with specific facets of the job. Smith, Kendall, and Hulin (1969) also argued that a separate measure ought to be used when the contribution of each of the facets of the job to overall job satisfaction is to be assessed. Another advantage for a separate measure, as Smith et al. (1969) noted, is that it transfers the problem of weighting the various job facets according to their importance directly from the researcher to the respondent. In the study reported here, overall job satisfaction was measured independently of satisfaction with job facets.

Relationship Between Specific Work Variables and Job Satisfaction

The relationship between specific work variables and job satisfaction has been addressed by several researchers. Their opinions are presented here because of their relevance to this study. For example, Vroom (1964, pp. 172-174) identified seven job facets as being common to different studies on job satisfaction:

1. attitudes toward the company and company management;
2. attitudes toward promotional opportunities;
3. attitudes toward job content;
4. attitudes toward supervision;
5. attitudes toward financial rewards;
6. attitudes toward working conditions; and
7. attitudes toward co-workers.

Whereas Vroom's list relates to both Herzberg's satisfiers and dissatisfiers, other writers emphasize the variables which are associated most strongly with satisfaction. For example, Lawler stated that the following job characteristics positively influence an individual's job satisfaction attitudes:

> [the job] (1) allows him to feel personally responsible for a meaningful portion of the work, (2) provides outcomes that are intrinsically meaningful or are otherwise experienced as worthwhile, and (3) provides feedback about what is accomplished. (Lawler, 1973, p. 158)

Herzberg et al. (1959) and Porter, Lawler, and Hackman (1975) claimed that intrinsic aspects of the work are positively related to overall job satisfaction, provided that the workers in question have a strong desire to satisfy Maslow's higher order needs.

An additional variable, interaction with others both inside and outside the organization on work-related matters, was identified by Iannone (1973), Schmidt (1976), and Van Maanen and Katz (1976) as a vital component of the activities of managers and school principals. Further, Vroom (1964) noted that specific factors frequently emerge in which interaction is the key component. He suggested that relationships tend to be satisfying to the extent that there is congruence of attitudes, acceptance by others, and progress towards the attainment of goals.

Concerning extrinsic aspects, Van Maanen and Katz (1976) noted that labor relations specialists and union leaders have emphasized the importance of organizational policies and conditions of work as influences on overall job satisfaction. Lawler (1973) stated that the relationship of extrinsic reward to overall job satisfaction may vary according to the importance that the individual places on these rewards. Schmidt (1976), using a modified "Herzberg critical incident technique" with 74 secondary school principals and other administrators in Chicago, found that recognition, achievement, and advancement were perceived to be major determinants of these principals' overall satisfaction, whereas salary, interpersonal relationships, policy and administration, and supervision tended to be highly dissatisfying.

Recent studies with teachers in Alberta by Holdaway (1978) and superintendents in California by Cochran (1977) have identified job factors related to the satisfaction of educators. Cochran found that personal satisfaction with the superintendency had the highest mean score among the seven factors which he identified. He also found that job satisfaction of the superintendents was unrelated to whether their assignment was in an elementary, secondary or unified school district. The results of these and other studies led to identification of the following seven factors as being relevant to the job satisfaction of principals:

1. the work itself;
2. occupational status and prestige;
3. interaction with district administration;
4. interaction with teachers;
5. interaction with students;
6. salary and benefits; and
7. working conditions.

Research Questions and Methodology

The studies discussed above guided the development of the questionnaire and the research methodology used in the study reported in this article. The following major research questions were addressed:

1. What is the extent of the overall satisfaction experienced by high school principals?
2. What clustering of items is produced when the principals' responses are subjected to factor analysis?
3. To what extent are the factor scores correlated with the overall satisfaction scores?

4. What relationships exist between selected background variables and the factor scores identified in (2) above, and with the overall job satisfaction scores?
5. What do the findings of this study contribute to the theory on job satisfaction?

In this study "facets" refers to aspects that have been identified in the literature as related to job satisfaction, as well as to experiences identified by respondents as leading to job satisfaction or dissatisfaction.

Sample

All principals in the Province of Alberta (excluding principals of private, special and one-room schools) served as the population of the study. A stratified random sample was drawn to ensure proportional representation of principals from the four types of publicly funded administrative units. One-third of the names were selected producing a sample of 410 principals. Twenty-three returns of the 350 received were deleted because they were incomplete, leaving 327 (79.8%) usable responses.

Questionnaire

Section A contained questions regarding various characteristics of the principals and their work setting including age, sex, marital status, and employment status of the spouse. Other questions sought information of the professional characteristics of the respondents, such as the level of education. Another set of questions sought information about the organizational setting in which the respondents worked, for example, the size of the school.

Overall job satisfaction was initially assessed in Section B by four items adapted from the studies of Throndson (1969), Johnson and Weiss (1971), and Holdaway (1978). Respondents were asked to rate the following four items on a six-point scale from "Highly Satisfied" to "Highly Dissatisfied":

1. the effectiveness of your school in educating students who come to it (compared with other schools known to you);
2. social relationships in your work;
3. the chance to do something that makes use of your abilities; and
4. your overall satisfaction with your job.

Originally the measure of overall job satisfaction was to be the mean score of the four items in the Overall Satisfaction Instrument, but the Pearson correlation coefficient between Satisfaction with School Effectiveness and each of the other three variables was low ($r=.20$ to $.26$). Consequently, Item 4, Your Overall Satisfaction with Your Job, was selected for further analysis. The relationship between this variable and the mean score of the other three items in the Overall Satisfaction Instrument was both statistically significant ($p<0.01$) and substantial ($r=0.84$). Thus item 4 was used as the measure for Overall Job Satisfaction.

The review of the literature identifies seventy facets as being related to various aspects of the principal's job. Several of these facets were adapted from the Minnesota Satisfaction Questionnaire reported by Johnson and Weiss (1971), while others were adapted from the questionnaire developed by Holdaway (1978). These seventy facets were rated on a six-point scale by a class of Master's students in educational administration and were also examined by a panel of three doctoral candidates. Questions involving facets were deleted if the facets were judged to be of minor importance to the principal, if they were ambiguous and difficult to answer, or if they failed to discriminate among respondents. The remaining forty-five facets

were organized into the five categories of Working Conditions, Personnel-related Matters, School-related Matters, District-related Matters and Occupation-related Matters to constitute Section C of the questionnaire.

A six-point scale, which ranged from "Highly Satisfied" to "Highly Dissatisfied," was used to rate the extent of facet satisfaction. No provision was made for Undecided or Neutral or Not Applicable response categories. This approach was in accord with the view of Porter et al. (1975, p. 53) who stated that "people are rarely neutral about things they perceive or experience" and that they "tend to evaluate most things in terms of whether they like or dislike them."

Two sections of the questionnaire, Section B (Overall Satisfaction) and Section C (Facet Satisfaction) were pilot-tested by using the responses of twenty-four school principals. One item was subsequently deleted, one was added, and some wording modifications were made. A measure of internal consistency was obtained for the 45-item scale on facet satisfaction with Kuder-Richardson formula 20 (K-20) which revealed a reliability coefficient of 0.94.

Findings

Question 1: Overall and Facet Satisfaction of Principals

About 28 percent of the principals indicated that they were highly satisfied with their work, 57 percent were moderately satisfied, and 10 percent slightly satisfied. About 5 percent of the principals indicated that they were at least slightly dissatisfied with their position. Nonetheless, 95 percent of the principals expressed satisfaction, the mean overall satisfaction score being 5.05 on the six-point scale.

This high level of job satisfaction was also apparent in the responses to the individual items in Section C of the questionnaire as shown in Table 1. The six items with the highest ratings of "satisfied" were relationships with teachers, relationships with students, social position in the community, consequences of participative staff decisions, competence of staff in coping with day-to-day problems, and sense of accomplishment as an administrator.

The least mean satisfaction was experienced with the way in which consultation between board and teachers concerning working conditions was conducted, the portion of time devoted to operational duties, the availability of counselling services, and the way in which collective bargaining was conducted.

Question 2: Results of Factor Analysis

The 45 job-satisfaction items of the questionnaire were factor-analyzed using the method of principal factoring with iterations (PA2) from the Statistical Package for the Social Sciences (SPSS), yielding eight orthogonal factors from a principal-axis varimax solution. Table 2 presents the factor loadings of the 45 items on the eight factors, accounting for 56.5 percent of the total variance. Inspection of the items with the highest loadings on the factors suggested names for the factors. The factors in order of percentage of total variance were named Liaison at District Level, Principal-Teacher Work Involvement, Status Recognition, Responsibility and Autonomy, Resource Adequacy, Salary and Benefits, Task Demands, and Rapport with Students.

TABLE 1

ITEMS FOR WHICH THE HIGHEST AND LOWEST PERCENTAGES "SATISFIED" WERE OBTAINED
(N=327)

Item	Percentage Satisfied	Mean
Your relationships with teachers	97.9	5.24
Your relationships with students	96.6	5.21
Your social position in the community	94.2	4.91
Consequences of participative staff decisions	93.3	4.86
Competence of your staff in coping with day-to-day problems	93.0	4.98
Your sense of accomplishment as an administrator	92.7	4.77
The way in which teacher/board collective bargaining is conducted	59.0	3.57
Availability of counselling services	56.0	3.62
The portion of time devoted to operational duties	54.7	3.62
The way in which consultation between board and teachers concerning working conditions is conducted	44.0	3.22

Question 3: Correlation of Factor Scores and Overall Satisfaction Scores

The relationship of the factor scores to Overall Job Satisfaction was further examined through multiple regression analysis, controlling for the effect of background variables which previous researchers had considered relevant to the studies on satisfaction. These background variables were sex, age, educational level and experience of principals, and size and location (urban, town, rural) of the schools. Normally, the variable that contributes most to the variance in the criterion variable enters first. However, by specifying that all background variables be entered first, regardless of their contribution to Overall Satisfaction, the variance attributed to these variables was controlled. The factor scores were then entered in order of their contribution to Overall Satisfaction. Results of the regression analysis are summarized in Table 3. The selected background variables accounted for 4 percent of the variance in Overall Satisfaction. The discussion of this relationship is contained in the analysis of Question 4. Five factors accounted for most of the additional variance in Overall Satisfaction: Responsibility and Autonomy at 14 percent, Principal-Teacher Work Involvement at 8 percent, Liaison at District Level at 5 percent, Status Recognition at 3 percent, and Task Demands at 2 percent. Three factors—Salary and Benefits, Resource Adequacy, and Rapport with Students—failed to account significantly for any of the variance in Overall Satisfaction of Principals. The results indicated clearly that three factors accounted for most of the variance in Overall Satisfaction when the analysis was controlled for the effect of selected background variables. Those three factors were Responsibility and Autonomy, Principal-Teacher Work Involvement, and Liaison at District Level.

Question 4: Relationship of Satisfaction Scores to Background Variables

The correlation matrix between the satisfaction scores and the background variables is presented in Table 4. Analysis of the statistically significant correlations provides further elaboration of differences in satisfaction scores, especially as they relate to different principal characteristics and system characteristics. The analysis is summarized for each of the six background variables used in the study. In general, the correlation coefficients are very low.

Educational level of the principals. Only one correlation coefficient which was statistically significant ($p<0.05$) was obtained between the educational level of the principals and their satisfaction factor scores. The higher the educational level of the principals, the more satisfied they tended to be with the factor of Resource Adequacy.

TABLE 2

VARIMAX FACTOR SOLUTION FOR 45 SATISFACTION VARIABLES USING EIGHT FACTORS (N=327)

Satisfaction Item	Factors and Factor Loadings (: 100)								
	1	2	3	4	5	6	7	8	Communality (+ 100)
Liaison at District Level									
Method to implement policy	80	02	13	09	05	03	09	01	68
Involvement in decision making	76	10	12	19	05	-05	09	04	66
Board expectations for principal	74	01	15	20	03	04	16	15	64
Consultations on working conditions	68	08	08	-13	27	19	-06	-08	61
Relationships with central office	58	04	09	27	06	-09	10	12	46
Evaluation of principals	54	01	19	27	-07	16	12	12	46
Availability of advice	52	10	20	27	13	00	08	17	44
Procedure on suspension and expulsion	45	08	08	-01	11	18	13	16	30
Authority of admin. position	43	16	30	29	02	10	24	15	47
Collective bargaining procedures	41	20	-02	-05	23	33	-01	01	37
Opportunities for in-service education	39	06	23	25	22	11	11	10	35
Principal-Teacher Work Involvement									
Staff competence	00	69	13	02	14	08	-01	11	53
Teacher willingness to adopt principal innovations	-01	69	09	14	-05	17	08	08	55
Relationships with teachers	03	66	14	09	01	09	02	24	53
Staff attitudes to curriculum change	21	64	08	11	19	07	09	-05	52
Consequences of participative decisions	12	60	24	31	03	10	08	15	58
Opportunity to help teachers solve professional problems	09	41	12	17	09	19	28	17	37
Status Recognition									
Recognition by other professionals	32	22	65	00	14	09	05	00	61
Recognition by others	21	15	59	24	00	27	16	10	58
Social position in community	25	11	58	20	03	25	00	12	54
Parent attitude to education	08	16	47	-04	23	19	04	28	42
Sense of accomplishment	20	25	39	37	02	11	26	26	54

TABLE 2 CONTINUED

Satisfaction Item	Factors and Factor Loadings (: 100)								
	1	2	3	4	5	6	7	8	Communality (+100)
Responsibility and Autonomy									
Freedom to allocate teaching assignments	33	32	-01	56	20	04	15	8	60
Freedom to seek out new ideas	22	23	12	52	20	09	01	25	50
Responsibility of the principal	29	24	26	48	07	09	26	15	53
Accountability for school program	39	30	12	47	16	21	07	06	54
Authority over budget preparation	28	12	12	42	26	11	-01	-04	36
Freedom to organize for individual differences	16	28	07	37	31	07	16	24	42
Resource Adequacy									
Access to library resources	-01	-03	08	15	61	18	10	14	46
Physical working conditions	08	08	10	17	52	11	29	-04	42
Availability of community facilities	14	11	28	03	51	18	-01	07	41
Availability of clerical help	34	06	-06	15	41	03	30	-11	42
Availability of counseling services	16	20	02	07	40	13	09	08	26
Salary and Benefits									
Retirement benefits	01	09	15	04	03	57	11	01	36
Salary	15	15	16	01	13	54	10	02	40
Sabbatical leave	01	14	07	05	18	54	12	05	54
Sick leave	07	06	15	19	19	50	-03	16	50
Task Demands									
Portion of time devoted to operational duties	29	05	01	00	39	23	58	09	64
Number of hours expected to work	25	16	10	13	21	34	56	06	59
Variety of tasks in workload	29	12	38	19	21	00	44	06	52
Effect of job on personal life	17	25	31	10	21	17	41	14	46
Rapport with Students									
Relationships with students	11	17	14	16	03	09	05	62	48
Attitude of students toward staff	16	33	13	11	12	05	09	59	53
Provision of custodial services	06	28	-09	15	22	22	09	-02	22
Methods of reporting to parents	26	12	23	06	15	08	10	20	22
Eigenvalues	12.62	3.18	2.34	1.89	1.60	1.32	1.28	1.20	
Percentage of total variance	28.1	7.1	5.2	4.2	3.5	2.9	2.8	2.7	56.5
Percentage of common variance	56.8	12.7	8.5	6.4	5.1	3.6	3.5	3.2	100

Age of the principals. Four statistically significant correlation coefficients were obtained between the satisfaction scores and the age of the principals. The older the principals were, the more satisfied they tended to be with the factors of Resource Adequacy, Salary and Benefits, and Overall Satisfaction. On the other hand, the older principals tended to be less satisfied with Responsibility and Autonomy.

Sex. Only one statistically significant correlation was observed between sex and satisfaction scores. The male principals tended to be less satisfied with Salary and Benefits than were the female principals.

TABLE 3

STEPWISE MULTIPLE REGRESSION ANALYSIS WITH OVERALL SATISFACTION AS CRITERION AND THE FACTOR SCORES AS PREDICTORS WHEN CONTROLLING FOR SELECTED BACKGROUND VARIABLES OF PRINCIPALS
(N=327)

Variables Entered	R^2	Increase in R^2	r
Background Variables	.04		
Responsibility and Autonomy	.18*	.14	.47
Principal-Teacher Work Involvement	.26*	.08	.42
Liaison at District Level	.30*	.05	.37
Status Recognition	.33*	.03	.34
Tasks Demands	.35*	.02	.36
Salary and Benefits	.35	.00	.22
Resource Adequacy	.35	.00	.24
Rapport with Students	.35	.00	.19

*Contribution significant at the .01 level

Experience of the principals. Three significant correlations were obtained between the satisfaction scores and the years of experience of the principals. The more experienced principals tended to be more satisfied with the factors Resource Adequacy and Task Demands, as well as with Overall Satisfaction.

School size. School size was significantly correlated with four of the factor scores. Principals in larger schools tended to be more satisfied with Resource Adequacy, Salary and Benefits, and Task Demands, and to be less satisfied with Rapport with Students than were principals of smaller schools.

Location of schools (Urbanization). Four statistically significant correlation coefficients were obtained between the satisfaction factor scores and the location of the schools, classified as rural, town or city. The more urbanized the school setting, the more satisfied principals were with Principal-Teacher Work Involvement, Resource Adequacy, and Salary and Benefits, and the less satisfied they were with Liaison at District Level.

General Observations

This study examined the job satisfaction of a sample of public school principals by means of a questionnaire containing 45 items obtained from the literature on job satisfaction. Three aspects of job satisfaction were examined: overall satisfaction, facet satisfaction, and satisfaction factors.

Overall and Facet Satisfaction

About 95 percent of the public school principals expressed overall satisfaction with their jobs. This satisfaction was also apparent in their responses to individual items, especially to items on relationships with teachers, students and the community. However, the principals' satisfaction was much lower on matters related to bargaining, counselling, use of time, and consultations with the board on working conditions.

TABLE 4

PEARSON CORRELATION COEFFICIENTS BETWEEN SATISFACTION FACTOR SCORES AND BACKGROUND VARIABLES

Satisfaction Factors	Background Variables					
	Educational Level	Age	Sex 1 Female 2 Male	Experience	Size	Location 1 Rural 2 Town 3 City
Liaison at District Level	-.04	.05	.05	-.01	.03	-.21**
Principal-Teacher Work Involvement	.03	.08	-.04	.09	-.07	.12*
Status Recognition	-.09	.06	-.03	.03	-.02	.08
Responsibility and Autonomy	-.02	-.10*	-.04	-.08	.02	.01
Resource Adequacy	.16**	.23**	-.03	.21**	.28**	.34**
Salaries and Benefits	.02	.10*	-.15**	.08	.14**	.20**
Task Demands	.08	.00	.10*	.16**	.10*	-.04
Rapport with Students	-.09	-.00	.04	-.02	-.16**	.06
Overall Satisfaction	-.03	.16**	-.01	.19**	.08	.03

* $p \leq .05$

** $p \leq .01$

The range of satisfaction with job facets was apparently not reflected in the level of Overall Satisfaction, indicating that overall satisfaction may be different from the sum of the satisfaction scores on distinct facets. The principals may be reasonably satisfied with their jobs, but at the same time dissatisfied with specific facets of their work.

Factor Scores

The varimax factor analysis yielded eight distinct factors of job satisfaction. Of these eight, five were significantly correlated with Overall Satisfaction, but not very substantially. In the regression analysis only 35 percent of the variance on Overall Satisfaction was accounted for by the factors. Responsibility and Autonomy was the best predictor of overall satisfaction, followed by Principal-Teacher Work Involvement, Liaison at District Level, Status Recognition, and Task Demands.

Background Variables and Job Satisfaction

The age and experience of principals were the only background variables which were positively correlated with Overall Satisfaction. These two variables were also positively correlated with Resource Adequacy. In addition, age was positively correlated with Salary and Benefits, while experience was positively correlated with Task Demands.

The size of schools, though not significantly related to Overall Satisfaction, was correlated significantly with several satisfaction factors. Size was positively correlated with Resource Adequacy, Salary and Benefits, and Task Demands, and negatively correlated with Rapport with Students. Thus the larger the schools the more satisfied the principals tended to be with three of the satisfaction factors, and the less satisfied they tended to be with Rapport with Students.

The greater the urbanization of schools the more satisfied the principals tended to be with Resource Adequacy, and Salary and Benefits, and less satisfied with Liaison at District Level.

Discussion

Several questions arise out of the findings on overall satisfaction of the school principals. For instance, how does the job satisfaction of principals compare with that of teachers? Are the principals perhaps too satisfied with their jobs? If so, why? Is the Overall Satisfaction measure an appropriate measure which can be used across different occupations? The low degree to which the factors predict Overall Satisfaction in this study suggest that overall satisfaction is achieved differently by different principals. For instance, one principal said, "My staff provides both great satisfaction and frustration." Another stated "Business management often consumes far more time than educational decisions on policy directions."

The identification of five significant predictors of overall satisfaction presents a further problem. Should other facets have been examined, or is overall satisfaction different from the sum of a series of satisfiers on a job? This study suggests that overall satisfaction is not necessarily the sum of the satisfiers on a number of items; in fact, several seemingly major factors in the job situation, such as Rapport with Students, appear not to be substantially correlated with overall satisfaction. Further study on the methodology of research on satisfaction is suggested by these findings.

The background variables in general were only minor contributors to the job satisfaction of the principals. Perhaps the two most significant findings in this area were that the principals in city schools generally had less satisfaction through Liaison at District Level, and that principals of larger schools had less satisfaction with Rapport with Students. These point to two areas where deliberate changes may be in order. In the first instance, the principals in urban schools sense a problem with their relationships with central office and/or with the superintendent. The communication between the two levels needs examination in order to reduce dissatisfaction related to this liaison.

Perhaps even more important is the finding that principals of larger schools tend to be more satisfied with Resource Adequacy and less with their Rapport with Students. Policies and practices need to be examined to see why the shift of these principals' satisfaction is away from students and toward resources.

A basic difference between principals and teachers is noted in regard to the sources of job satisfaction. According to Holdaway (1978), teachers' major source of

job satisfaction comes from their relationships with students. For the principals of this study this relationship was a minor though clearly identifiable factor in job satisfaction which, however, did not contribute to their overall satisfaction on the job. This falling away in importance of relationships with students as teachers become principals seems to increase as the schools become larger.

The identification of Resource Adequacy as a job satisfaction factor presents a different problem. It also is independent of the overall satisfaction of principals, yet increases in importance as a satisfier as schools become larger or more urbanized. Perhaps this change indicates a difference in the role of the principal between rural and urban schools. This finding supports the Herzberg (1959) claim that "the work itself" is a major factor in job satisfaction. Thus principals have less to do with students as schools increase in size and are more concerned with resource adequacy. The substantial correlation between Resource Adequacy and location of schools could be related to the current practices of decentralizing budget decisions to the school level.

Salary and Benefits, another job satisfaction factor identified, was positively related with the age of the principal, size of the school, and urbanization of the school; it was significantly related to the sex of the principals. Since it was not related significantly to Overall Satisfaction, these findings provide for interesting speculation. Older principals, principals in larger schools and city principals appear to be more satisfied with salary and benefits than the other principals; female principals tend to be more satisfied with salary and benefits than male principals.

The two major conclusions of this study were, first, that background variables did not contribute significantly to the Overall Satisfaction of school principals, and second, that the major contributors to Overall Satisfaction in order of importance were Responsibility and Autonomy, Principal-Teacher Work Involvement, Liaison at District Level, Status Recognition, and Task Demands. These factors illustrate the complexity of job satisfaction for administrators. Statements by the principals themselves illustrate the various job satisfaction factors in their work situation. Several examples are provided below.

Responsibility and Autonomy. "Having the authority and responsibility to effect changes in the educational process which are beneficial to both students and teachers."

Principal-Teacher Work Involvement. "I enjoy the companionship and educational growth associating with staff personnel of the school."

Liaison at District Level. "Lack of proper communication with Central Office—little or no consultation yet decisions made requiring a tremendous amount of administrative time."

Status Recognition. "The relationship with all individuals, staff, parents, administration is usually positive and satisfying."

Task Demands. "The additional little tasks that are expected by the Board, the teachers and students, and the community. There are not enough hours in a day."

Conclusion

The questions raised through this study emphasize the importance of research in the area of job satisfaction of administrators. The nature of satisfaction itself as it relates to the quality of work life needs further exploration. Whether the level of overall satisfaction expressed by principals or the range of levels of satisfaction on

individual facets is a better indicator of the quality of the working life of the principals is difficult to determine. Another aspect that should be examined is the relationship between the perception of levels of dissatisfaction and stress. Finally, further study is still needed to examine the importance of satisfaction for the effectiveness of the principal and more importantly for the effectiveness of the school, and to interpret the importance of all of the satisfaction variables for the quality of the working life of students and teachers, as well as principals.

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The Alberta Journal of Educational Research *Vol. XXX, No. 3, September, 1984, 171-178*

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The Achievement Productivity of Psychological Variables: A Replication and Extension in Rajasthan, India

To determine the significance and relative influence of individual and environmental variables on learning, the achievement-test scores of 439 tenth-grade students in 39 schools in Rajasthan, India were regressed on IQ, socio-economic status (SES), self-rated motivation, peer-rated studiousness, peer-group status, and parent-rated home environment. The squared multiple-regression of .76 is highly significant; and both correlations and partial correlations conform closely in sign and magnitude to those that have been quantitatively synthesized from many studies. The hypothesized variables contribute uniquely to achievement variance; and three variables—SES, sex, and language medium of instruction—are superfluous in the context of the hypothesized variables.

During the past two decades, several groups began research programs on students' perceptions of the psychological environments of their classroom social

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groups. Reviews (Randawa & Fu, 1973; Walberg & Moos, 1980) as well as a quantitative synthesis of twelve studies carried out on more than 17,000 students in four countries of English speakers (Haertel, Walbert, & Haertel, 1981) show that such perceptions obtained generally at mid-academic year account for substantial variance in cognitive, affective, and behavioral learning-outcome measures beyond that accounted for by corresponding beginning-of-course measures or mental abilities or both.

Thus, perceptions of the learning environment have incremental, predictive validity; and they are suggestive of the aspects of group climate or morale that promote various learning outcomes, some of which are rarely measured in conventional school testing programs and program evaluations. Such perceptions also have discriminant or criterion validity, that is, statistical sensitivity to educational and psychological conditions and treatments when used as criteria in experimental and correlational studies.

During the past decade, five investigations have extended or generalized the predictability of learning outcomes from classroom psychological environments to newly industrializing countries in the Caribbean, South America, and Central and South Asia (see Paige, 1979, for a detailed review). The sample characteristics and major findings of these studies are shown in Table 1.

TABLE 1

CHARACTERISTICS OF FIVE STUDIES OF PSYCHOLOGICAL LEARNING ENVIRONMENTS IN DEVELOPING COUNTRIES

Author	Sample	R^2 and Dependent Variables	Generally Significant Independent Variables
Holsinger (1973)	2,533 students in 90 third, fourth & fifth grade classes in the Federal District of Brazil	.19, .64 modernity .09, .52 information	Amount of schooling, age, socioeconomic status, classroom environment, television exposure, school physical environment, peer group, and teacher attitudes; individual and class level R^2's are reported first and second in each row
Persand (1976)	1,277 third and sixth grade students in 18 schools in Jamaica	-social development -aspirations	Student perceptions of school task orientation, work organization, psychological support, cooperation and innovation; school staff characteristics, parent and peer socioeconomic status; television exposure
Walberg, Rasher and Singh (1977)	166 groups of tenth grade students in 150 classes in 26 schools in Rajasthan, India	.67 science achievement .81 school studies achievement	IQ, amount of Teacher training, and classroom psychological environment were significant in regressions when controlled for one another and other variables
Paige (1977)	1,621 sixth grade students in 30 urban and 30 rural schools in East Java, Indonesia	.12 modernity .27 achievement	Pupil background characteristics, home learning environment, school and class physical environment and organizational characteristics, and school location
Present Study (1982)	439 high and low achieveing tenth grade students in 39 predominantly high and low achieving schools in in Rajasthan, India	.76 achievement	IQ, classroom environment, home environment, peer group, socioeconomic status, and pupil studiousness

Several studies in Table 1 complement those from more industrialized countries because they extend the learning criteria beyond the usual outcomes and demon-

strate the cross-cultural validity of environment measures. Holsinger (1973), for example, examined a variety of environmental influences in Brazil on "modernity," the tendency for individuals to defer immediate gratification for longterm benefits, to plan small families, and to engage in similar behavior conducive to individual and national success in developing countries. Student scores on modernity scales and information tests were found to be significantly related individually and collectively to several sets of student and environmental variables, as indicated in Table 1. The studies in Table 1 statistically control the environment-learning correlation for plausible determinants of learning other than IQ and prior achievement. Several of the studies, moreover, have an advantage over typical ones conducted in the United States in that achievement tests geared specifically to required national or provincial curricula are employed, which removes a large source of error variation attributable to differences in exposure to subject matter and the mismatch of measured outcomes and educational intents.

General Influences on Learning

Such studies avoid the patently unsustainable assumption that the classroom is a closed system. They instead assume that factors outside the school such as the home and peer-group environments influence student ability and motivation as well as classroom climate, responsiveness to instruction, and achievement performance, and further that learning itself takes place to a large extent outside the class. The possible importance of outside influences can be seen in the relatively small percentage of waking potentially-educative hours from birth through age 18 that the student spends in school—about 14.1—assuming 10 hours of sleep, 180 six-hour school days per year, and perfect attendance. More comprehensive studies that include both fixed variables such as IQ and socio-economic status as well as potentially alterable variables in the class, home, and peer group afford estimates of the relative importance of each variable as a part of a larger set.

More can be learned from such comprehensive studies that include larger sets of such variables than from the usual bivariate or single covariate study. Multiple regressions, moreover, that simultaneously control the variables for one another provide more stringent tests of causality and practical suggestions for improvements in educational productivity within and outside the schools.

From quantitative syntheses of hundreds of studies, it appears that school learning depends on nine proximal psychological constructs: student age or developmental level, motivation, and ability or prior achievement; quantity and quality of instruction (including self-instruction); the social-psychological environments of the home, classroom group, and peer group; and exposure to mass media, particularly television (*Research Synthesis: The State of the Art*, 1980; Walberg, 1981). Although the studies of Table 1 neglect quantity and quality of instruction and mass media exposure on the whole, they include from three to five of the constructs; and, in some cases, they account for a considerable amount of variance in learning outcomes. The purpose of the present study is to replicate the earlier study in Rajasthan and to probe simultaneously the validity of five of the constructs—student ability and motivation, and classroom, home, and peer-group environments.

Method

Sample

Both purposiveness and economy determined the sampling plan. It was hoped that a relatively small set of schools and students could be sampled that would vary

greatly in achievement outcomes. Larger variation in outcomes, of course, raises the possibility of detecting significant covariation with alterable independent variables and allows interpolation rather than extrapolation of conclusions over a wider range.

From 239 schools in the State of Rajasthan, India that participated in the tenth-grade Board of Secondary Examinations program conducted by government, the two sets of fifteen schools with the best and worst average scores on objective tests geared to the standard curriculum were selected. In addition, to obtain a somewhat larger sample than 30 schools and to include some middle-scoring schools conveniently, all nine schools within the Central Political Territory were included, which resulted in a sample of 39 schools.

From each school, the students with the top five and bottom five scores on the examinations were selected for participation in the study. In several schools where absences were anticipated because of holidays, a few more than the ten extreme-scoring students were included. For this reason, the total sample included 439 instead of 390 students.

Variables and Testing Procedure

Tables 2 through 4 describe the psychometric and other variables used in the study. Soon after the achievement tests were scored and analyzed, the students completed the IQ, classroom environment, and motivation scales in school; and the parents filled out the home-environment questionnaire in their homes.

TABLE 2

VARIABLE DESCRIPTION, SAMPLE ITEMS AND UNIVARIATE STATISTICS

Variables	Description or Sample Items	Mean	Standard Deviation
Students' achievement	The percentage of correct answers to extensive multiple-choice achievement items secured on the Secondary School Examination in science, social studies, language, and mathematics conducted by the Board of Secondary Education, Rajasthan, India. Internal consistency reliabilities of components in previous analyzed average in the .70s. "From the point of view of raw materials, which is the best place for establishing a sugar factory--Ajmer, Bombay, Lucknow, or Kampur?" "Which is the best method for prevention of cholera--Vaccination, Innoculations, or Saline Injection?"	54.23	12.54
Pupil's IQ	The IQ test (in Hindi) with 100 short items on number series, deduction, vocabulary, synonyms and antonyms, analogies, and general knowledge; an internal consistency reliability was .94 in a large, heterogenous sample of Rajasthan.	96.40	12.18
Motivation rated by students	23 items on the questionnaire: "At home, when I start a new project, I usually Finish it...5...4...3...2...1...Don't finish it." "When I do something well, it is because I Work hard...5...4...3...2...1...Was lucky." "I am proud of my school work All the time...5...4...3...2...1...Never."	72.44	15.90
Home environment rated by parents	45 items on the questionnaire: "Does your child have a library card? Yes☐No☐" "Does the child usually watch television without parent there? Yes☐No☐" "Do you know your child's best subject in school? Yes☐No☐"	83.89	23.38

TABLE 3

SCALES, SAMPLE ITEMS, RELIABILITIES, AND STATISTICS OF FIFTEEN SUBSCALES FROM THE LEARNING ENVIRONMENT INVENTORY

Scales	Sample Item	Alpha Reliability	Mean	Standard Deviation
Cohesiveness	All students know each other well.	.69	11.68	3.19
Satisfaction	The students enjoy their classwork.	.79	10.82	3.29
-Friction	Certain students are responsible for petty quarrels.	.72	12.89	5.03
-Apathy	Students do not care what the class does.	.82	4.27	4.93
-Cliqueness	Some students refuse to mix with the rest of the class.	.65	8.48	3.26
Democracy	Students have about equal influence on the class.	.67	6.43	4.50
-Diversity	Interests vary greatly within the group.	.53	14.31	5.92
-Favoritism	Certain students are favored more than others.	.78	10.23	4.01
Goal Direction	Each student knows the goals of the course.	.85	10.05	3.44
Material environment	The room is bright and comfortable.	.56	13.57	4.13
Formality	The class has rules to guide its activities.	.76	13.61	4.32
Difficulty	Students find the work hard to do.	.64	6.11	4.28
Speed	The course material is covered quickly.	.70	9.30	3.07
-Disorganization	The class is inefficient and not organized.	.82	8.16	4.19
Competitiveness	There is much competition in the class.	.78	9.35	3.43

NOTE: Subscales preceded by a minus sign measure aspects of the sociopsychological environment that are usually negatively related to learning outcomes.

TABLE 4

VARIABLES, CODING AND PERCENTAGES

Variables	Coding and Percentages
Peer-group	Government school = 1 (54.5%) Private, tuition school = 2 (45.5%)
Female students	Boys = 1 (69.1%) Girls = 2 (30.9%)
Socioeconomic status	Graded by three dimensions-- education, occupation and income of parents: Average = 1 (39.5%) High = 2 (60.5%)
English instruction	Hindi = 1 (63.6%) English = 2 (36.4%)
Studiousness	Classroom sociometric rating of pupils' classroom behavior: Mischievous = 1 (16.4%) Studiousness = 2 (83.6%)

Results and Discussion

As shown in Table 5, the achievement scores of the students were regressed on seven combinations of three sets of the independent variables—IQ, classroom environment, and other variables. The variances accounted for by all combinations of sets are significant beyond the .001 level. The coefficient of determination of the regression equation containing all the variables, .76, corresponds to a multiple correlation of .87 which exceeds the approximate reliability of the achievement measure.

TABLE 5

REGRESSIONS OF ACHIEVEMENT ON SETS OF VARIABLES

Sets of Independent Variables	Number of Variables	R^2
Student IQ	1	.620
Learning environment	15	.498
Other variables	9	.550
IQ and environment	16	.702
IQ and other variables	10	.707
Environment and other variables	24	.679
IQ, environment and other variables	25	.758

NOTE: All R^2 are significant at the .001 level; and the incremental variances attributable to adding environment, the other variables, and both to the regression containing IQ are also significant at the .001 level.

IQ, the sets of classroom environment variables, and the set of other variables each account for about half or slightly more of the variance in achievement. Moreover, the addition of the learning environment variables, the other variables, or both sets produces significant increments in the variance beyond that accounted for by IQ; the F-ratios are respectively 7.76, 14.15, and 9.81, all of which are significant beyond the .001 level. By subtraction of the variances in Table 5, IQ uniquely adds 7.9 percent to the explained variance when entered last, class environment similarly adds 5.1 percent, and the other variables add 5.6 percent.

Specific Variables

The first column in Table 6 shows the 95 percent confidence intervals of previous estimates of achievement correlations with the independent variables for those that are available (*Research Synthesis: The State of the Art*, 1980). These intervals are the mean correlations plus and minus two standard deviations or the fitted values from analyses of variance or regressions plus and minus two standard errors of estimate.

The correlations in the present study correspond reasonably well in sign and magnitude to those revealed by past research. As shown in Table 6, achievement correlated positively with Classroom Formality, the Material Environment, Cohesiveness, Satisfaction, Goal Direction, Speed, Competitiveness, and Diversity, and negatively with Apathy, Favoritism, Cliqueness, and Disorganization. Achievement also correlated positively with Peer Group, Socio-Economic Status, Studiousness, Motivation, IQ, and Home Environment. The correlations are generally higher than those in past research probably because of the wide achievement variation in the sample.

Sex, Motivation, Socio-Economic Status, and English as the medium of instruction are insignificant when the variables are controlled for one another by partial correlation, because they are weakly correlated with achievement, because they are correlated with the other independent variables, or both. The variables that remain

significant in partial correlation analysis are the classroom environment set, Peer Group, Studiousness, IQ, and Home Environment.

TABLE 6

CORRELATIONS AND PARTIAL CORRELATIONS WITH STUDENTS' ACHIEVEMENT

	Prior Estimate	Present Sample Estimates	
	Pearson	Pearson	Partial
Learning Environment			
Formality	(-.17)- .61	.62**	.19**
Material Environment	.02 - .80	.49**	.25**
Cohesiveness	.07 - .85	.39**	.16**
Satisfaction	.09 - .87	.32**	.16**
Goal Direction	.05 - .83	.30**	.18**
Speed	(-.29)- .49	.22**	.14**
Competitiveness	(-.29)- .49	.17**	.11
Diversity	(-.29)- .49	.15**	-.01*
Friction	(-.86)-(-.08)	-.02	-.09*
Democracy	.03 - .81	-.05	.01
Difficulty	.00 - .78	-.09**	-.03**
Apathy	.18 -(-.60)	-.30**	-.13**
Favoritism	.08 -(-.70)	-.31**	-.25**
Cliqueness	.12 -(-.66)	-.38**	-.20**
Disorganization	.13 -(-.65)	-.50**	-.25**
Peer Group	.20 - .36	.20**	.15**
Female Student	---	.25**	.07
Socioeconomic Status	(-.14)- .78	.40**	.02
English Instruction	---	.43**	.003
Pupils' Studiousness	---	.51**	.15**
IQ	.57 - .87	.79**	.50**
Motivation	.25 - .41	.50**	.08
Home Environment	.36 - .76	.69**	.30**

NOTE: The partial correlations are controlled for all independent variables except in the case of the learning environment variables which are not controlled for one another.

* = .05
** = .01

Conclusion

Contrary to some recent writings (see, for example, McDermott's [1976] edited collection, *Indeterminacy in Education*), quantitative syntheses of prior psychological research on classroom learning show fairly consistent, robust, and strong findings. It seems apparent, however, that learning is determined or influenced by multiple factors, perhaps nine, of which five proved significant when controlled for one another in the present study. Moreover, other factors, included for comparative purposes, including Socio-Economic Status and sex appear to be mediated by the more proximate factors. Quantity and quality of instruction, age or developmental level, and exposure to mass media were not included among the factors in this study; and it would be valuable to incorporate them in future investigations.

The importance of the present study is that it shows the generality of the significance of the factors in a culture far different from that of Australia, Canada and the United States. Along with related research, it suggests a valuable generality or universality of results concerning the consistent influential factors in learning.

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The Alberta Journal of Educational Research *Vol. XXX, No. 3, September, 1984, 179-193*

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Integrating School Curricula with Social Concerns

The attempt to integrate school curricula with social concerns has been a recurrent motif in North American education: the social data presented to students, or which is collected by them, is intended to contribute to a greater understanding of major social themes and the resolution of socially relevant problems apposite to each theme. In this article impediments to the implementation of the progressive ideal are outlined, and it is proposed that these obstacles can be reduced by incorporating a cognitive approach to social issues analysis. Evidence on the effectiveness of the approach is presented from a delayed treatment instructional experiment involving 320 students in grades 7 to 10 in one Ontario school system, with additional data provided by a partial replication involving 159 grade 7 students in a second Ontario school system.

The attempt to integrate school curricula with social concerns is a recurrent motif in North American education. Its essence is the belief that broad social themes should comprise a major portion of the school agenda and should be explicitly addressed in problem or issue contexts. In this approach the social data presented to students, or which is collected by them, is intended to contribute to a greater understanding of major social themes and the resolution of socially relevant problems apposite to each theme. It is anticipated that the information assimilated by students will be actively integrated into their real life concerns and lead ultimately to an improvement of society as these enlightened students graduate as

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responsible citizens. The leading contemporary exponents of this approach are Bourne and Eisenberg (1978), Manson and Vuicich (1977), Newmann (1975), Oliver and Newmann (1967-1973), and Oliver and Shaver (1974).

Problem Statement

Implementation of this ideal has been episodic, with the familiar pattern shared with other innovations of initial enthusiasm followed by a gradual return to mainstream approaches: the cross-disciplinary curriculum fights a losing battle against the core subjects orientation, and discussion classes aimed at the resolution of social issues struggle vainly against the twin threats of student apathy and disorder. Enthusiasts continue to exhort teachers to take up the movement. Why are these intuitively sensible approaches not adopted in more classrooms?

One set of explanations has to do with the relationship between schools and their social milieu, a relationship which is best understood in historical perspective. Historically the attempt to integrate curricula and social concerns has waxed and waned with the fate of the much more inclusive progressive education movement. Progressivism in education reached its philosophical heights in the first two decades of this century, became conventional wisdom in the depression and war years, experienced a severe decline under ferocious attack in the 1950s, revived unexpectedly to flourish in the turbulent 1960s and continued as a vibrant minority position in the back-to-basics era of the 1970s and 1980s.

Progressive education embraced an enormous diversity of ideals, practices and beliefs about education: identifying the core of the movement is fraught with peril. The most authoritative account (Cremin, 1962) categorically asserts that a capsule definition of the movement can never be devised because of its pluralistic and frequently contradictory character. Graham (1967), in reviewing the organizational development of progressivism, suggests that the phrase progressive education has been a normative rather than descriptive term, representing everything that was good about education in the 1920s and everything that was bad in the 1950s. Ravitch (1983) finds there has never been a clear cut definition of progressive education and that there has been more agreement about what it is not than what it is. The ideals of the movement were often honored in the breech, idiosyncratically applied and caricatured beyond recognition. These caveats notwithstanding, a catalogue of progressive ideals can be compiled:

- The curriculum should be designed in terms of the perceived needs of students; curriculum topics should be prioritized in terms of expected utility to the student and expanded to include health, vocational, family and community concerns.
- Instructional practices should be based on empirical research, which implies among other things that traditional subjects should be discarded in favor of a core curriculum focused on themes derived from the student's immediate experience, and that students should learn through direct experience rather than through passive encounters with texts.
- Schools should provide education to all types of children; instruction should be tailored to individual differences in their interests and abilities, with the emphasis on individual development rather than on the acquisition of knowledge.
- Instructional activities should be planned cooperatively by students and teachers; they should promote cooperation among students rather than competition and should provide ample opportunity for students' self-expression.

• Finally, the school should be closely linked to the community; for some this meant that the school should play a pivotal role in the reform of the community—for others it meant that students should learn to adjust to the existing community.

Progressivism in education emerged as part of the political protest movement of the same name in the first quarter of the century: it was the educational arm of the political movement. But in the subsequent decade it lost touch with its social and political foundations and became isolated as an organization limited to professional educators. Progressive education arose in response to conditions in the larger society and it fell when these conditions changed and it did not. The movement failed to keep pace with the transformation of society (Cremin, 1962); by not responding to new social issues its slogans became ossified and devoid of relevance.

Historical review of the progressive movement suggests that to be successful, attempts to integrate school curricula with social concerns must accurately appraise the society in which schools function and be responsive to it. But despite the importance of relating appropriately to the milieu, it is not sufficient. For example, even at the height of progressive influence there were constant reports of resistance on the part of teachers to the social concerns thrust, and evidence (recounted by Cremin, 1962, and Ravitch, 1983) that the task of teaching in this approach exceeded the competencies of a significant proportion of the teacher population. This suggests that a second set of explanations, focused on classroom variables and complementary to milieu factors, might assist in understanding why attempts to integrate school curricula with social concerns are less frequently adopted than one would expect:

1. There are distinctly different orientations to curriculum consisting of integrated belief systems about the ultimate ends of education and the means to accomplish these ends (Eisner & Vallance, 1974; Roberts, 1982; Miller, 1983). The social concerns thrust is simply one of many competing conceptions that may be less congruent with teacher preferences than alternative positions. This argument would help explain the reluctance of many; it would not account for those who express initial interest but who are unable or unwilling to follow through on their intentions.

2. Available classroom resources are typically subject oriented, aimed at the transmission of the content of a discipline. Efforts to break out of these boundaries require resourceful teachers able and willing to track down articles, pamphlets and fugitive documents. Although a few specific curriculum products have been produced for teachers at various times (e.g., Rugg's textbook series in the 1920s and '30s, the Harvard Public Issues Series of the late 1960s and the OISE Canadian Critical Issues Series of the 1970s), these must be constantly revised. So too, teachers may assess their own expertise in social issues pessimistically and be uncomfortable when the need to broach these limits is perceived.

3. Teachers may be uncertain as to the specifics of what they are to accomplish. The themes explored appear to have limitless scope. What are the limits/goals of in-class investigation? What are the anticipated knowledge objectives of social problem-solving?

4. Equally important may be uncertainties about the means to be employed by students in making sense of social questions, the intellectual skills they should and must acquire to deal rationally with social problems and issues. The appealing image of a classroom of eager young people sharing and discussing the results of their investigations and arriving at a resolution of the problem dissolves in the reality of twenty or thirty individuals each clamoring to have his or her opinion heard. Stu-

dents do not necessarily become mature problem-solvers without expert guidance and assistance; e.g., a recent study (Ross, 1981) shows little or no improvement from grade 7 to grade 10 in the strategies developed by students to solve personal decision problems.

5. Uncertainties about means and ends are likely to create apparently insoluble assessment problems. Teachers may be reluctant to attempt social issues analysis if the standards for judging the product of the analysis are unknown or ambiguous. In the absence of clear, specific and measurable standards, teachers have a soft and limited evidentiary base for assessing student performance and for judging the effectiveness of instructional efforts.

A Cognitive Approach

The preceding list of problems constitutes a formidable set of obstacles to widespread adoption of the social concerns thrust and it would be unrealistic to seek panaceas. Potential solutions to some of these problems can be derived from recent developments in cognitive approaches to curriculum design. By cognitive approaches we mean orientations to instruction that focus on the overt teaching of the covert mental operations that underlie intellectual performance. One can of course view cognitive approaches as a competing platform of curriculum beliefs which is antithetical to the social concerns thrust, but it is helpful to consider the possibilities of integrating a cognitive orientation into a curriculum concerned with social issues. It should be noted that cognitive psychologists (e.g., Brown, 1978; Broudy, 1977; Spiro, 1977) recognize the importance of integrating school and out of school learning, even though some tend to treat the integrating process as more of a problem impeding school learning than as a goal of instruction (e.g., Champagne & Klopfer, 1981; Clement, 1981).

This article outlines the development and pilot testing of an instructional program that attempts to reduce some of the classroom obstacles previously listed which impede the implementation of the social concerns thrust. The study was undertaken as one component of a many-faceted set of programs to improve the intellectual performance of students in elementary and secondary schools. (An account of the scope of this set of programs is provided in Ross and Maynes, 1983b.)

Students who attempt to analyze social issues are required to perform a number of interrelated tasks of varying complexity. The core task involves decision-making: the synthesis of social information to select the best course of action from an array of competing alternatives. This core task can be decomposed into a set of component skills. First and foremost among these is the ability to focus the decision problem and bring it within manageable scope, and to develop a plan, or framework, within which the solution may be sought. Other skills follow from these, for example locating appropriate data, assessing its adequacy and dealing with conflicts and variability among data sources, selecting, recording and interpreting relevant data, drawing a valid conclusion and finally reporting the findings in a coherent way. Performance of the latter set of skills, however, is directed and shaped by the quality of the overall framework that the decision-maker has developed. Consequently, in this project emphasis was placed on designing instruction that would help students formulate a focus and framework for decision problems.

The second major emphasis was placed on the development of growth schemes (or learning hierarchies) for these skills. Mature, literate adults focus and frame their approach to social decisions in a sophisticated way. Their behavior can be

analyzed and described. Very young children, on the other hand, approach their decisions in a very unsophisticated manner, which can also be analyzed and described. Between the two exists a gap which is variously bridged by experience and practice and which leads to skill maturation and the accumulation of appropriate content knowledge. It follows then that those who would improve the quality of children's experience through the medium of instruction should be aware that the mature performance may be initially beyond the grasp of most elementary or even early secondary school children. However, if incremental levels between the upper and lower extremes are described and instruction matched to these, students can be helped towards the upper goal by focusing successively on the lower and intermediate levels. In this way each identified skill increment can be achieved without overloading the capacity of the students, and teachers may temporarily discontinue input at the point at which feedback alerts them to the need for extensive practice and consolidation before proceeding further.

Growth schemes for the two core skills of the core task are given in Tables 1 and 2. In each case the main dimensions of growth involve the explicitness of the decision problem, the number of alternative courses of action considered and the explicitness of the criteria used to assess alternatives.

TABLE 1

GROWTH SCHEME FOR THE SKILL OF
FOCUSING A DECISION-MAKING PROBLEM

Level	Level Characteristics	Example (Issue: Canada's energy resources)
1	factual question not calling for decision	How much oil does Canada have?
2	decision question/alternative courses of action and criteria not identified	What should Canada do about the energy situation?
3	one course of action identified/criteria for judging it not specified	Should Canada get its future energy supplies from coal?
4	two or more alternative courses of action identified/criteria for judging them not specified	Is coal a better energy source than oil?
5	two or more alternative courses of action identified/one or more explicit criteria specified	Would it be safer and cheaper for Canada to depend on solar power rather than nuclear power?

These growth schemes became the blueprints for the instructional sequences that were piloted in the study. Since it was anticipated that students would have had little or no previous experience with formal decision-making procedures, the lessons began with the lowest level of the growth scheme. A student-teacher discussion format was used. As each successive level was introduced, its advantages relative to the previous level were pointed out through specific examples. Further examples were then provided and the students began to take the initiative for devel-

oping the focus and framework. Finally, additional examples for individual student practice were supplied. Evaluation of student performance with these exercise examples allowed teachers to diagnose and remediate problems of individual students. Additional detail on the instructional design process is provided in Ross and Maynes (1983b).

TABLE 2

GROWTH SCHEME FOR THE SKILL OF ESTABLISHING A FRAMEWORK FOR A DECISION-MAKING PROBLEM

Level 1 — one course of action/feeble justification given for it

Build Mall Downtown
near our school so I can go to MacDonald's

Level 2 — several alternative courses of action/different advantages identified for each alternative

Build the Mall Downtown	Build the Mall East of City
-lots of people already go downtown -good roads -downtown merchants want it here	-good flat land -no buildings would have to be torn down -people in east end would have have a place to shop

Level 3 — several alternative courses of action/different advantages and disadvantages identified for each alternative

	Build the Mall Downtown	Build the Mall East of City
Advantages	-lots of people available -good roads -downtown merchants want it here	-good flat land -no buildings would have to be torn down -would give people in east end a place to shop
Disadvantages	-would have to move some stores -land is very expensive -requires bylaw change	-would have to build new roads -farmland would be lost

Level 4 — several alternative courses of action/explicit criteria systematically applied to each

	Build the Mall Downtown	Build the Mall East of City	Build the Mall West of City
What downtown merchants want	+	-	-
Cost of land	-	+	+
Availability of shoppers	+	+	-
Suitability of roads	+	-	-

The context for the pilot testing of the instructional intervention was Intermediate Geography. Two versions of the program were prepared based on the content requirements of the Ontario Ministry of Education Guidelines for Geography. One unit was based on the Population Patterns section of the Guideline (taught in grade 7 in the pilot school system) and the other was based on the Canadian Resources section (taught in grades 9 or 10 in the pilot school system). A large excerpt of the grades 9 to 10 version is provided in Ross and Maynes (1982, chapter 4).

Evaluation Materials

The growth schemes also provided blueprints for the creation of multiple-choice test items to assess student achievement of the skills. Each of the response alternatives on a single item presented a framework or a focusing question, as the case

might be, that illustrated a level of the growth scheme. The task of the respondent then was to select the best response option; the assumption was that a student would recognize and select the response that matched his or her understanding of the way the problem should be approached.

Each focusing item contained five alternatives representing levels 1 to 5 of Table 1. Each frameworking item contained four alternatives, one corresponding to each of levels 1 to 4 of Table 2. A pool of such test items was available (Ross & Maynes, 1981). Six for each skill were selected and two of each were randomly assigned to one of three test forms, A, B and C.

An additional ten-point item for assessing the students' ability to select the appropriate data from a chart, graph or article and transfer it to the appropriate cell of an alternatives-by-criteria framework representation (i.e., level 4 of Table 2) was included in each booklet.

Each booklet contained two additional open-ended test items. In each a situation, similar to the situations in the multiple-choice items, was presented and students were required to produce rather than select a response, either the focus or the framework they would apply to the problem. It was anticipated that student performance on the open-ended items would be lower (because the task is more demanding) but that the pattern of results for the constructed and multiple-choice items would be similar (Ausubel & Robinson, 1969; Ebel, 1979; Ross & Maynes, 1983a).

Evaluation Design

A delayed treatment experiment was designed. Fourteen volunteer classrooms in one school system were identified. Classrooms were randomly assigned to the early treatment condition (i.e., the program was taught between the first and second testing periods) or to the delayed treatment condition, (i.e., the program was taught between the second and third testing periods). Test responses generated at the first and second testing periods by the delayed treatment groups provided control data for the early treatment groups; during the delay period teachers continued with their regular geography program which included discussion of social issues without explicit attention to decision-making skills. After classrooms had been randomly assigned, one teacher requested a change from the late to early treatment condition for scheduling reasons unrelated to the pilot test. The resulting evaluation design is displayed in Table 3.

Students in each class were randomly assigned to three test order groups: one-third of the students in each class completed the tests in the order A-B-C, one-third in the order B-C-A and one-third in the order C-A-B.

A half-day inservice session was provided to the volunteer teachers to acquaint them with the growth schemes and the lesson plans. Instruction in marking the open-ended tests was provided at a subsequent inservice.

Student performance on each test occasion was machine scored for the multiple-choice booklets; (the maximum possible score was 26). The internal consistencies (Hoyt reliabilities) of the multiple-choice booklets on each test administration are displayed in Table 4.

The open-ended items were marked by the teachers, after inservice, by assigning a score that indicated the growth scheme level matched by the student response. (In a previous study [Ross & Maynes, 1983c] a similar procedure produced high

correlations between scores assigned by teachers and scores assigned to a random sample of responses by a trained marker.)

TABLE 3

EVALUATION DESIGN

	Early Treatment		Late Treatment	
	Classes	Student	Classes	Student
Grade	n	n	n	n
7	3	82	3	71
9	3	62	2	37
10	2	51	1	17
Total		195		125

TABLE 4

INTERNAL CONSISTENCY (HOYT RELIABILITY) OF MULTIPLE-CHOICE INSTRUMENTS

Test Occasion	Form A	Form B	Form C
1	.44	.62	.58
2	.57	.71	.68
3	.64	.70	.61

Findings

The results displayed in Figure 1 and Table 5 suggest a very marked effect due to the program. A trend analysis of the 14 class means in the multiple-choice test indicated there was a strong linear trend in the data ($F=52.78$, $p<.00001$) which was not different for the two groups ($F=2.78$, $p<.12$). The quadratic trend, however, while nonsignificant ($F=3.51$, $p<.10$) for the groups combined, was significantly different in the groups ($F=43.36$, $p<.001$), reflecting the test occasion 2 differences in the means. There were significant differences in the overall test occasion scores ($F=40.22$, $p<.00001$) and a significant interaction between test occasions and treatment groups ($F=13.13$, $p<.001$) again reflecting test occasion 2, and possibly test occasion 3, group differences. The analysis also confirmed an overall difference between the two treatment groups ($F=6.69$, $p<.05$).

Figure 1 displays these results and shows the large divergence in test scores on test occasion 2. The early treatment classes who received the instruction immediately following test occasion 1 show large gains on test occasion 2, while the

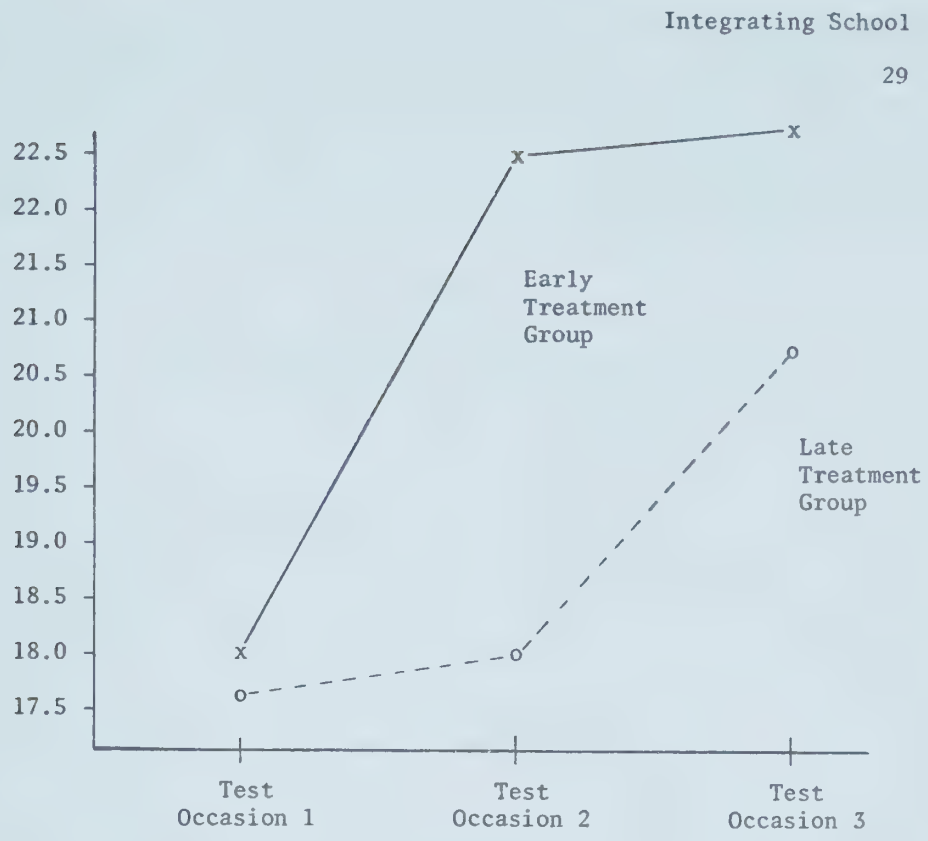

Figure 1. Overall Class Means on Multiple-Choice Instruments

uninstructed classes scored much as they did on pretest. By test occasion 3, the late treatment classes also show gains, and the early treatment classes show evidence of retention of what they had learned. The figure also shows that the late treatment classes, although performing very similarly to the early group on pretest, did not benefit as much from the instruction since their average test scores do not match those of the early group on test occasion 3. The list of class means in Table 5 shows that this is undoubtedly due to one anomalous grade 9 class in the late treatment group in which there was no change in the average score across all three occasions. Otherwise the direction of results is in every case, whatever the grade level, consistent with expectations.

The lower post-instructional performances of the late treatment students as compared to the early treatment group is reflected in the effect sizes (based on Glass, 1978, and computed using class means). Between test occasions 1 and 2 the early treatment elementary students showed an effect size between class means of 3.55, the secondary students of 4.49. In the late treatment, on the other hand, the effect sizes between occasions 2 and 3 were much smaller, 1.57 for the elementary students and 2.79 for the secondary students.[1]

The pattern of results across occasions for the open-ended items is very similar to that of the multiple-choice tests (see Figures 2 and 3). As would be expected for a produced rather than selected response, the scores tend to be lower. For the focusing items, on the open-ended pretest the students produced average responses of about level 1.5; on the multiple-choice tests they average around level 2. Post-instructional performance on the open-ended items ranges between level 2 and level 3 while on the multiple-choice items it tends to be level 4 and above. On the

frameworking tests there is a similar pattern with the open-ended pretests averaging less than 1.5 and increasing to around 2.5 on the posttest, while on the multiple-choice tests they moved from around level 3 to somewhat better than level 3.5. It was noted there was much greater variation in the subgroup performances on the multiple-choice framework items (results not displayed) than on the open-ended framework items, the latter showing the most consistent results of the study.

TABLE 5

CLASS MEANS AND STANDARD DEVIATIONS
MULTIPLE-CHOICE DATA

Group	Class	n	Test Occasion 1	2	3
Early Treatment					
Elementary					
Grade 7	1	30	16.27 (3.61)	21.23 (3.71)	21.33 (5.05)
	2	30	16.30 (4.19)	21.87 (3.73)	22.53 (3.38)
	3	22	16.14 (3.43)	22.46 (3.33)	22.23 (3.57)
Secondary					
Grade 9	4	17	15.82 (4.36)	20.53 (4.82)	19.77 (3.82)
	5	16	19.06 (3.47)	24.38 (3.38)	24.38 (3.32)
	6	29	18.55 (3.81)	21.45 (3.42)	22.93 (2.99)
Grade 10	7	31	20.90 (3.73)	24.16 (3.31)	23.90 (3.28)
	8	20	21.60 (3.25)	23.70 (3.47)	23.40 (3.86)
Late Treatment					
Elementary					
Grade 7	1	24	18.25 (3.95)	18.54 (4.11)	21.79 (3.78)
	2	19	15.47 (3.03)	15.95 (3.55)	17.05 (4.67)
	3	28	17.43 (3.28)	17.71 (4.01)	23.61 (2.53)
Secondary					
Grade 9	4	22	19.18 (3.65)	19.82 (4.45)	23.32 (4.12)
	5	15	18.53 (3.96)	18.73 (4.22)	18.53 (4.91)
Grade 10	6	17	17.88 (4.09)	17.24 (4.24)	19.29 (4.58)

Table 6 presents t-test comparisons for the two open-ended item subtests for each test order. The table shows that the comparisons between early and late treatment subgroups are as expected: there are no significant differences on test occasion 1; the early treatment subgroups outperform the late treatment subgroups on occasion 2; and with one exception there are no differences between subgroups on occasion 3. Similarly the table shows that the within-group comparisons are as expected: all the early treatment subgroups and none of the late treatment subgroups show significant gains on both skills from occasion 1 to occasion 2; with one exception all the early treatment subgroups show no change from occasion 2 to occasion 3, and with one exception all the late treatment subgroups show the expected gain from occasion 2 to occasion 3.

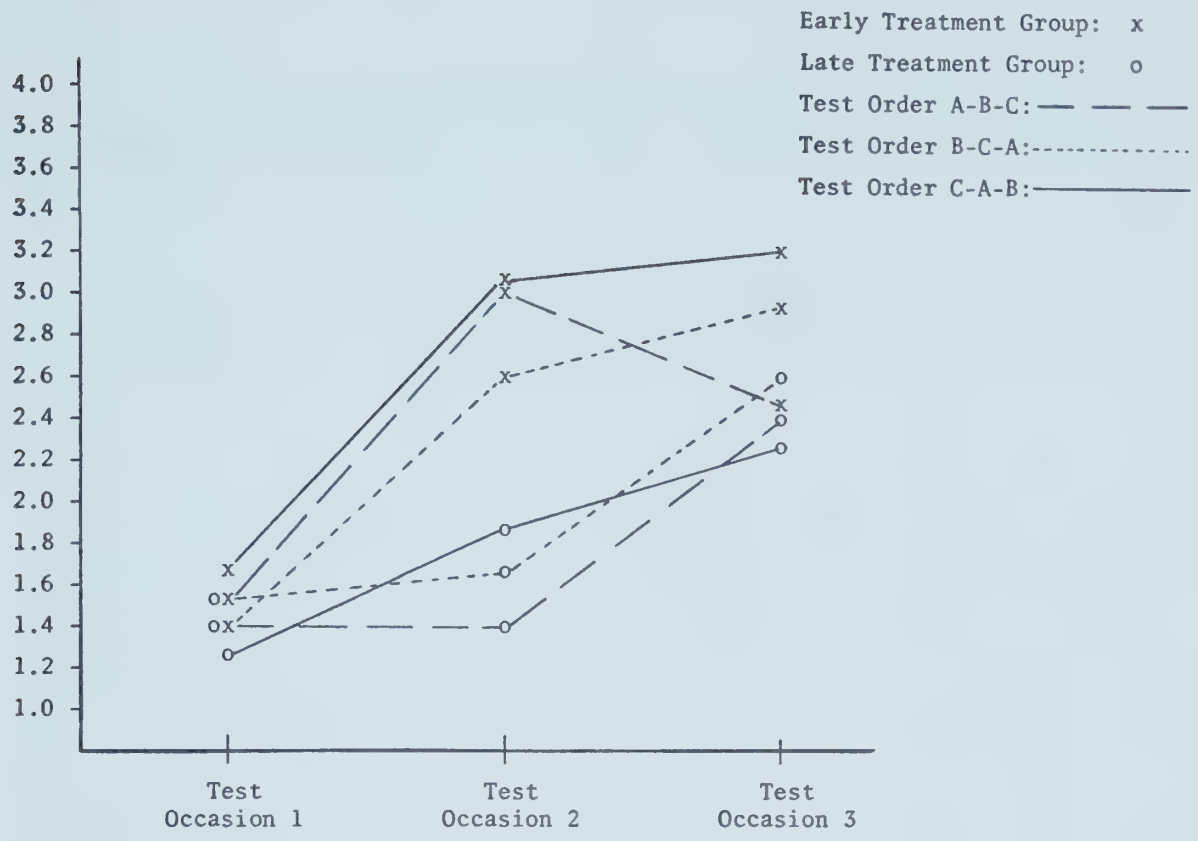

Figure 2. Open-Ended Focusing Test Results

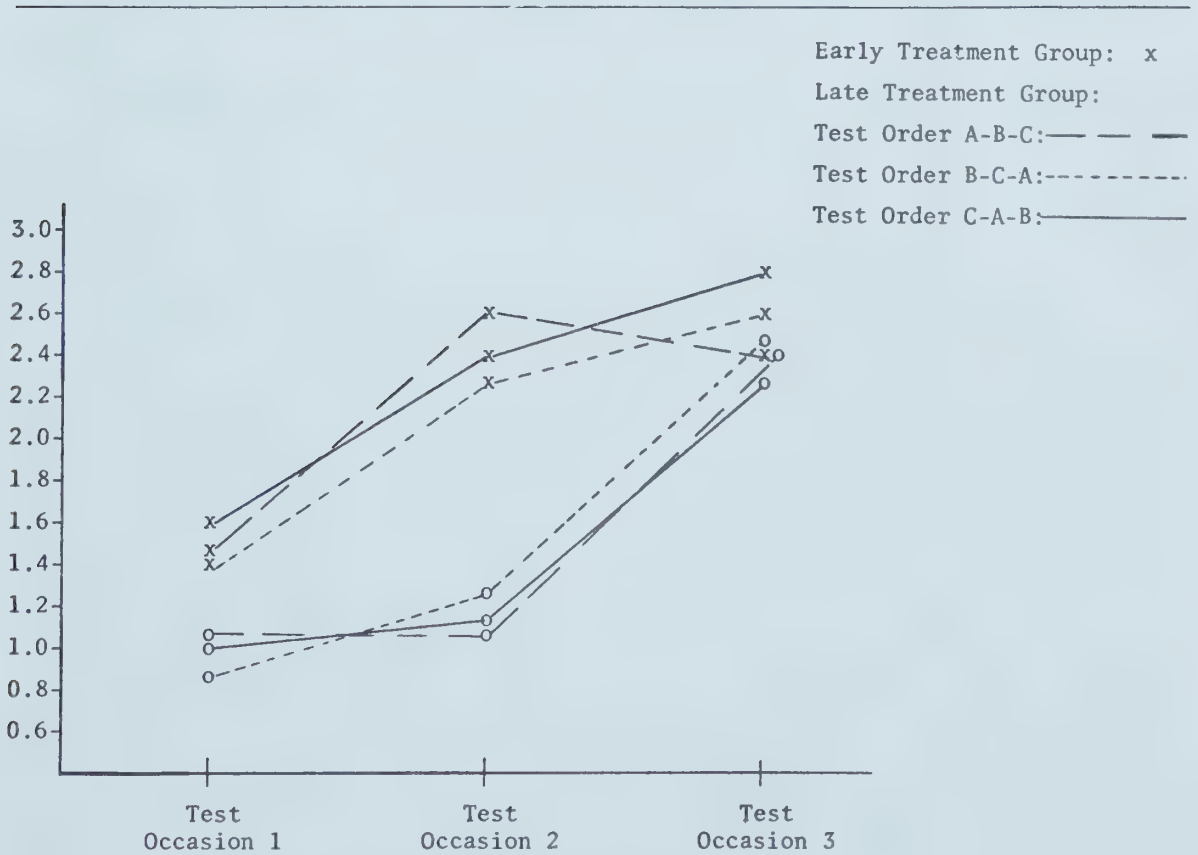

Figure 3. Open-Ended Frameworking Test Results

TABLE 6

STUDENT MEANS AND STANDARD DEVIATIONS
OPEN-ENDED SUBTESTS FOR EACH TREATMENT AND ORDER GROUP

			Test Occasions		
Order	Group	n	1	2	3
			Focussing		
A-B-C	early	57	1.53 (1.54)	3.02 * (1.48)	2.54 * (1.68)
			ns	*	ns
	late	39	1.39 (1.41)	1.44 ns (1.35)	2.41 * (1.55)
B-C-A	early	57	1.37 (1.57)	2.63 * (1.63)	2.93 ns (1.52)
			ns	*	ns
	late	36	1.53 (1.58)	1.67 ns (1.39)	2.56 * (1.36)
C-A-B	early	49	1.67 (1.61)	3.00 * (1.40)	3.23 ns (1.23)
			ns	*	*
	late	41	1.29 (1.40)	1.85 ns (1.26)	2.27 ns (1.64)
			Frameworking		
A-B-C	early	57	1.51 (1.70)	2.60 * (1.95)	2.39 ns (2.01)
			ns	*	ns
	late	39	1.08 (1.58)	1.10 ns (1.48)	2.41 * (1.83)
B-C-A	early	57	1.39 (1.47)	2.28 * (1.89)	2.58 ns (1.82)
			ns	*	ns
	late	36	0.89 (1.33)	1.33 ns (1.53)	2.47 * (1.80)
C-A-B	early	49	1.57 (1.72)	2.37 * (2.00)	2.80 ns (1.95)
			ns	*	ns
	late	41	0.98 (1.73)	1.17 ns (1.50)	2.34 * (1.93)

* Significant at $p < .05$, two tailed test of statistical significance

TABLE 7

STUDENT MEANS AND STANDARD DEVIATIONS
MULTIPLE-CHOICE AND OPEN-ENDED PRE- AND POSTTEST TESTS
REPLICATION STUDY

		Test Occasion	
Test Order	n	1	2
		Open-Ended Instruments	
Focussing			
A-B	83	1.81 (1.60)	2.62 * (1.63)
B-A	76	1.76 (1.49)	2.82 * (1.43)
Frameworking			
A-B	83	1.33 (1.74)	2.57 * (1.80)
B-A	76	1.59 (1.63)	2.38 * (1.85)
		Multiple-Choice Instruments	
A-B	83	18.51 (3.64)	23.23 * (4.06)
B-A	76	21.24 (3.57)	21.32 ns (3.59)

* Significant at $p < .05$, two-tailed test of statistical significance

Replication

The pilot test was partially replicated in a second school system. Seven volunteer teachers taught the grade 7 version of the program. In this system no control group was formed and only two test forms, A & B, were used in a straight pre-posttest design. Half of the students in each of these classes received the tests in the A-B and half in the B-A order.

The results for the partial replication are displayed in Table 7 for both sets of instruments in both test orders. The posttest results show a statistically significant gain over pretest scores as anticipated with one exception (the B-A order for the multiple-choice scores).

Discussion

The pilot test data provide sound evidence that the program was effective. After just a few hours of intensive instruction the responses of the students to problems requiring decisions have altered significantly, and moreover it appears that they retain what they have learned, at least for one month. This is true in all classes, regardless of grade or ability level, including, in the early treatment group, a grade 7 class that included a number of grade 6 students, and a grade 9 four-year class of lower ability students. The findings from the original study were partially replicated in a subsequent investigation involving a second school system. On the other hand, not all students show complete mastery of the skills. For that result to be achieved, teachers would have to discuss or assign many further example problems in other topics and contexts throughout the year.

To what extent does a cognitive approach reduce the previously described impediments to implementing the progressive ideal? There are several grounds for optimism.

1. Adopting a cognitive approach to the analysis of social issues broadens the group of potential users, making pursuit of the social concerns thrust more attractive to a larger proportion of the teacher population. Teachers with a modest interest in Social Reconstruction (using Eisner and Vallance's categories), but who give their main commitment to the development of cognitive processes, are the most likely beneficiaries of the broader appeal.

One should not exaggerate the extent to which the base of potential users could be expanded: curriculum orientations represent stable complexes of beliefs and ideals that govern curriculum choices of individual teachers. It is unlikely, for example, that those who were attracted to the anti-intellectualism of progressivism as manifested in the 1930s and '40s[2] would be moved by a cognitive appeal. By the same token, progressivism was an extremely pluralistic movement—one should not be excessively pessimistic about the possibilities of freeing the social concerns thrust from the excesses of the progressivists of this period.

2. The shortage of classroom resources is alleviated in part by the materials produced for the pilot test. These of course are written within an Ontario context and may not be directly transferable to other jurisdictions. So too, social issues materials quickly become dated as new information about important social concerns becomes available and the issues themselves rise and fall in public consciousness. The materials produced in the project are more likely to have utility indirectly as illustrations or as exemplary models of a strategy for teaching social issues analysis that can be rewritten to meet new curriculum contexts.

3. The main contribution of the cognitive approach is likely to be its surfacing of the underlying intellectual skills required to analyze social issues. By making these overt objectives of instruction and by providing students with explicit strategies appropriate to their levels of intellectual development, the likelihood of productive task oriented discussion increases substantially. Particularly relevant is the focusing of discussion that develops when students target their critiques of other positions taken in the class on specific cells of an alternatives x criteria matrix.

4. Finally, a cognitive approach provides greater specificity for judging the quality of the outcomes of social issues analysis. The specific criteria for making a decision (i.e., the dimensions of growth in Tables 1 and 2) provide an operational definition of the decision-making process which is a necessary (but not sufficient) condition of reflective social inquiry.

The study then has demonstrated that the skills can be taught, learned and used. No attempt was made to assess the nature and degree of concurrent content learning, nor did it assess the issue of the extent to which mastery of the skills assists students to integrate the knowledge accumulated in school and to recognize its usefulness in socially relevant contexts. But the expectation is plausible, the first steps have been accomplished, teachers are adopting the materials and further studies will monitor the outcomes.

Notes

1. In the absence of control group data for this group the effect size was calculated using the formula:

$$\frac{\bar{x}\ \text{Test Occasion 3} - \bar{x}\ \text{Test Occasion 2}}{\text{S.D. Test Occasion 2}}$$

2. The anti-intellectualism of progressivism in the 1930s and '40s is evidenced by a lack of interest in student performance on achievement measures (with the notable exception on the part of the testing movement led by Thorndike), by manipulating teachers and students through group dynamics to reach pre-determined ends in allegedly democratic discussions and pseudo-participatory decision-making, by misrepresenting the findings of pedagogical research and by subordinating disciplinary inquiry and classical knowledge structures to short term and trivial social needs of students. For a detailed account of this theme within progressivism, see Cremin (1963), Graham (1967, especially pp. 149-151), Nelson (1978), and Ravitch (1983, especially pp. 48-49 and pp. 68-80).

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The Alberta Journal of Educational Research *Vol. XXX, No. 3, September, 1984, 194-212*

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The Influence of Improved Reading Skill On Writing Skill

Four intact experimental classes (n=94) which received a reading treatment and four control classes (n=100) wrote pre- and post-compositions which were evaluated for overall quality, syntactic density, T-unit length, productivity, and selected grammatical errors. Despite substantial and statistically significant differences on the Davis Reading Test six months following the treatment, the post-compositions written by the two groups were remarkably similar, with random gains favoring first one group and then the other. Only the analysis of grammatical errors revealed changes consistently in the hypothesized direction, but most of these were statistically non-significant. Previous studies of the influence of reading skill on writing skill failed to demonstrate measurable reading changes on standardized instruments and therefore could claim no consequent writing changes. The current study achieved reading changes, but these did not result in changes on writing measures.

Background

One of the cornerstones of English pedagogy is the belief that reading and writing are interrelated, interdependent skills and the consequent assumption that that which enhances one will automatically benefit the other. Although this read-write pedagogy in its various forms can be traced back at least to the Sophists some two thousand years ago (Broudy & Palmer, 1965), empirical evidence to support a di-

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rect, causative relationship between reading skill and writing skill has remained elusive.

Despite considerable professional interest in the interrelationships among the language arts during the 1950s and 1960s (Hildreth, 1954; Artley, Hildreth, Townsend, Beery, & Dawson, 1954; Burrows, Parke, Edmund, Deboer, Horn, Herrick, & Strickland, 1961; Meckel, 1963; Russell & Fea, 1963; Harris, 1969), few researchers have conducted experimental studies into the relationships between reading and writing. Researchers attempting to teach reading skills and measure the effects on written composition have either failed to demonstrate significant improvement in reading skill (Eurich, 1931; Schneider, 1971) or failed to use standard measures of either reading or writing skill (Mathews, Larson, & Butler, 1945). On the other hand, studies by Obenchain (1971), Reed (1967), Nagle (1972), Weaver (1977), Levine (1976), Combs (1977), Collins (1981), and Yusuf (1982) suggest that various writing programs may influence reading skill.

Tangential evidence on the relationships between the skills is provided by descriptive studies (Loban 1963, 1966, and 1967; Diederich, 1957; Lazdowski, 1976; Baker, 1954; Evanechko, Ollila, & Armstrong, 1974; Heller, 1980; Shanahan, 1980; McConnell, 1982), by correlational studies (Kuntz, 1975; Johnson, 1976; Harris, 1975; Fishco, 1966; Schonell, 1942; Thomas, 1976; Hill, 1982; Mohler, 1983), and by studies of the effects of various methods of teaching beginning reading (Fyfe, 1965; Shapiro & Shapiro, 1973; Mazurkiewicz, 1973; Stewart, 1969; Ackerman, 1969; Smith, 1968; Quinn, 1977; Eckhoff, 1983). The most careful documentation of this relationship is provided by Loban's 13-year study in the Oakland Public Schools. Commenting on the reading and writing abilities of grade-six students, Loban (1963) noted that "on every statistical measure, one fact is extremely clear in the present study: those who read well also write well; those who read poorly also write poorly" (p. 75). Reporting on the same students when they had reached grade nine, he noted that the relationships became more pronounced as the years passed. Diederich (1957), examining the relationship between verbal scores on the Scholastic Aptitude Test and teachers' quality ratings of students' composition skills, concluded that good measures of reading ability were the most trustworthy indicators of writing ability. A good deal of correlational data also supports the hypothesis that reading and writing are closely related skills. Tovatt and Miller (1967) reported very high correlations among the STEP Reading, Writing, and Listening tests with coefficients ranging from .86 to .91. Correlation coefficients between these tests and written compositions ranged from .44 to .62. Theorists such as Keltner (1957), Becker (1963), and Thompson (1967), on the other hand, argue that such correlations are in fact not meaningful and that they may well be taken to indicate differences rather than similarities among the skills. In addition, a number of studies have failed to show relationships between reading and writing skills (Siedow, 1973; Fuller, 1974; DeLuca, 1979; Perry, 1980; MacNeill, 1982, for example). Stotsky's (1983) review of the literature shows little progress on the basic issues involved since the survey of studies by one of the present authors five years earlier (Belanger, 1978b). At the present state of knowledge, the striking correlations between reading and writing remain poorly understood, despite their apparent promise in the troubled curricular domain of literacy. Hence the urgency to go beyond correlations to any level of causal interrelationships that may be involved.

The Study

This study was designed to assess the possibility that reading change can produce writing change. It examined the relationship between measured changes in reading ability and consequent measured changes in writing skill, if any, at two grade levels over a six-month period. The design called for two experimental and two control classes at each of the grade-nine and grade-ten levels. Following the administration of the initial reading test and collection of the initial writing samples, the experimental students received the reading treatment. Parallel reading tests were given and parallel writing samples were taken three months and six months following the administration of the treatment.

Hypotheses

We hypothesized that groups of experimental students who had shown significantly greater gains on reading measures than control groups did would, as a consequence, show greater gains on writing measures than the control groups did. We asked specifically:

1. Would the hypothesized writing gains be most evident in measures of quality, syntactic maturity (T-unit length or syntactic density), productivity, or skill in usage?
2. Would the hypothesized writing gains follow the reading gains immediately (be most evident in the first three months)? follow the reading gains but with some delay (be most evident in the second three months)? or accompany the reading gains (be evident at both the three- and six-month periods)?
3. Would the hypothesized writing gains be influenced by the sex of the subject, the ability of the subject, or the grade level of the subject?

Procedures

The experimental and control groups were compared on the reading and each of the four writing measures using three time periods: the initial three months (the pre-mid comparison), the second three months (the mid-post comparison), and the full six months of the experiment (the pre-post comparison). Since pre-mid and pre-post results were very similar, only the six-month comparison (pre-post) is presented here. Data on the 36 null hypotheses tested in the study—comparisons on the four writing measures by grade level, treatment, and sex of the subject for each of the three time periods—are available in the complete document (ERIC: ED 163 409).

1. *The Sample.* Eight intact classes, two pairs on the grade-nine and two pairs on the grade-ten level, each pair taught by one teacher, were randomly designated as experimental and control groups. After attrition, 94 experimental and 100 control students were involved from November through June.

2. *The Treatment.* This study was conducted in conjunction with a reading experiment that examined longitudinal effects of the S.O.S. Reading Technique, a replication on a larger scale of several previous studies (Martin, 1975). The reading study was conducted and reported by Martin and Belanger (1977). The writing study differs from previous read-write studies, in that differences in reading growth between the experimental and control groups were assured prior to undertaking analysis of the writing sample. Although the data for the reading and writing studies

were collected simultaneously, writing analysis was delayed until reading results were clear. A detailed rationale for the reading technique is contained in E. Martin (1976) and R. Martin (1977).

Three forms of the *Davis Reading Test*, Series 2, were used as the reading measure. Reviews of the test (Buros, 1965) suggested that it was the best instrument with three or more forms available for the grade levels in question.

TABLE 1

READING MEASURE: STATISTICAL DECISIONS BASED ON ANALYSIS OF COVARIANCE FOLLOWED BY PRE-POST CHANGES ON THE READING MEASURE

	Grade 9		Grade 10		Grades Combined	
Statistical Data	n	prob	n	prob	n	prob
Treatment	103	0.020*	91	0.023*	194	0.0013*
Teacher Interaction	103	0.16	91	0.69	194	0.55
Sex Interaction	103	0.93	91	0.48	194	0.65
Average Change						
Experimental	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$
Boys	28	+0.82	25	+3.60	53	+2.13
Girls	22	+3.46	19	+1.00	41	+2.32
Combined	50	+1.98	44	+2.48	94	+2.21
Control						
Boys	24	+0.13	23	-1.61	47	-0.72
Girls	29	-1.03	24	-0.25	53	-0.68
Combined	53	-0.51	47	-0.92	100	-0.70

*$p < .05$

3. *Findings of the Reading Study.* As Table 1 shows, with the pretest as covariate, experimental and control groups are significantly different on the posttest, both when the grades are examined separately and when they are combined. Over the six months of the experiment, growth in reading skill was divided equally between the grade-nine and grade-ten subjects. Nor was sex a significant factor in the results, as lack of significant interaction between the treatment and the sex of the subjects shows. The three-month comparison (not shown) revealed that the majority of these gains occurred in the first three months of the experiment although the gap between the experimental and control groups continued to widen, albeit more slowly, over the second three months.

In addition, to test for differing effects with high-, medium-, and low-ability students, two way analysis of variance was used. No statistically significant interaction between treatment and ability level was found. Probabilities ranged between .40

and .70 suggesting that the effects of the treatment were not influenced by the subjects' ability.

The writing study depended, of course, on the nature of the reading results. These were statistically significant, but were they large enough to be able to generate consequent writing changes? One way of examining the magnitude of the reading change is to compare the data with between-year differences on the norms which accompany the reading test. As Table 1 shows, over the six months of the experiment, the grade-nine and -ten experimental students gained 2.49 and 3.40 points respectively more than their control counterparts. A "year's" difference on the Davis norms is a rough approximation and varies with the grades involved and the levels of the raw scores. As a general rule, about six raw-score points separate grade-nine and -ten levels on the raw scores. By this measure, the experimental students exceeded the control students by about a half-year's growth, .41 for the grade nines and .57 for the grade tens.

4. *The Writing Measure.* One 30-minute in-class composition was written on assigned topics at each of the three test periods. Writing topics were adapted from Bell's (1971) study of the writing preferences of high school students in the Edmonton area, a study showing that grade-ten students voluntarily chose "school," "home," and "society" most often as essay topics. The three topics were systematically rotated at each testing period.

Student papers were subjected to five separate analyses: a 37-percent random subsample of the compositions was judged for overall quality by experienced raters; this subsample was reanalyzed for major sentence errors; an additional 13 percent subsample (that is a total of 50 percent) was analyzed using Belanger's (1978a) correction of Golub and Kidder's (1974) Syntactic Density Score (SDS); and all of the papers collected were analyzed for T-unit length and productivity.[1]

TABLE 2

RATER RELIABILITIES OBTAINED EACH DAY USING PEARSON PRODUCT-MOMENT CORRELATIONS

Day	Three Raters
1	.868
2	.881
Grade 10	.868
3	.847
4	.876
Grade 9	.859
Overall	.859

a. *Overall Quality Analysis.* The papers of 36 experimental and 36 control students (216 compositions) were judged for overall quality by three experienced raters using Diederich's (1974) scoring procedures under conditions outlined by Braddock,

Lloyd-Jones, and Schoer (1963). As Table 2 shows, Diederich's (1974) three-rater method resulted in an overall interrater reliability of .858 calculated by Pearson product-moment correlations. Calculations were based on the two ratings ultimately used to establish the grade for each paper.

b. *Infrequency of Major Errors.* The infrequency of major usage errors (fragments, run-on sentences, errors in subject-verb agreement, and errors in pronoun agreement) was found to be a significant predictor of "good" tenth-grade writing by Martin (1968) and to correlate highly with teachers' quality ratings by Harris (1975) and Grobe (1981). Though significant changes in this area were not hypothesized, a subsample of the papers (the 216 compositions used in the quality analysis above) was analyzed for major errors.

c. *Syntactic Density Score.* The papers of 12 experimental and 12 control students were added to those in the overall quality subsample for the Syntactic Density Score analysis, a total of 288 compositions. Golub and Kidder's (1974) Syntactic Density Score has T-unit length as a basic component but goes beyond clause and sentence length factors and includes such items as number of modals, number of "be" and "have" auxiliaries, the number of prepositional phrases, the number of possessives, the number of adverbs of time, and the number of gerunds, participles and absolutes found in structures of free modification. Belanger's (1978a) correction eliminates a mathematical anomaly whereby an increase in the number of T-units analyzed decreased the score of a writing sample. A check-coder analyzed photocopies of 20 randomly-selected compositions.

d. *T-unit Length.* All 582 compositions gathered in the study were analyzed for Hunt's (1965) T-unit length, said by O'Donnell (1976) to be a simple, objective, and valid measure of syntactic maturity. Since T-unit length is a subscore of the SDS, the check-coder's ratings were abstracted from the check-coding for the SDS and compared with the investigator's ratings. The two assessors disagreed on the number of T-units in only one of the 20 compositions.

e. *Productivity.* Martin (1968), Miller and Ney (1968), Zanotti (1970), Obenchain (1971), Palmer (1971), Stewart and Grobe (1979), and Grobe (1981) report that the length of a time-controlled composition is a good indicator of its quality. Again, check-codings were abstracted from the SDS.

5. *Correlations Among Writing Measures.* To estimate the degree of similarity among the writing measures, Pearson product-moment correlations were calculated. As Table 3 shows, the quality and productivity measures correlate very highly with each other and the syntactic density and T-unit measures correlate very highly with each other. However, the quality/productivity and syntactic density/T-unit measures correlate only slightly—often negatively—with each other. The very high correlations of beyond .90 between T-unit length and the SDS support findings of O'Donnell (1976) who suggests that the measures are so closely related (because the SDS relies so heavily on T-unit length) that the extra work required to calculate the SDS does not appear to be justified. Even with the corrected scale used here but not by O'Donnell, the two measures appear to yield virtually the same kinds of results. The slight negative correlations between the quality and T-unit measures support findings by Potter (1966), Martin (1968), Stewart and Grobe (1979), and Crowhurst (1980) which suggest that T-unit length is not a good indicator of composition quality.

6. *Statistical Procedures.* Because the initial reading measure indicated that the experimental and control groups were not of equivalent ability at the beginning of

the experiment, analysis of covariance with the pretest as the covariate was used to compare the experimental and control groups on both the reading and writing measures. Interactions between treatment and teacher and between the treatment and the sex of the subject were examined. In addition, two-way analysis of variance was used to examine the effects of the treatment on high-, mid-, and low-ability students, and correlations were computed between the reading and writing measures. The analysis of variance and covariance were performed at the University of Alberta Computing Centre using the program "ANOV 35: Three-Way Analysis of Variance and Covariance." Pearson product-moment correlations were computed on the program "DESTO5: Correlations with Optional t-tests."

TABLE 3

CORRELATIONS AMONG THE FOUR WRITING MEASURES USED IN THE STUDY

		Quality			Syntactic Density			T-Unit Length		
		n	r	prob	n	r	prob	n	r	prob
Syntactic Density	Pre	72	-0.069	0.562						
	Mid	72	-0.029	0.809						
	Post	72	-0.020	0.865						
T-Unit Length	Pre	72	-0.072	0.547	96	0.944	0.001			
	Mid	72	-0.059	0.623	96	0.901	0.001			
	Post	72	-0.031	0.797	96	0.904	0.001			
Fluency	Pre	72	0.347	0.003	96	-0.068	0.508	194	0.009	0.903
	Mid	72	0.483	0.0001	96	-0.255	0.012	194	-0.174	0.015
	Post	72	0.425	0.0001	96	0.087	0.399	194	0.094	0.190

[a] Since the sample sizes vary from 72 to 194, both the correlation coefficients (r) and the probabilities are given.

Findings

The data presented in this section offer absolutely no support for the hypothesis that growth in reading skill will automatically be accompanied by growth in writing skill. Of the 36 null hypotheses tested in the study, only three were rejected at the .05 level of confidence, approximately the number of rejections that would be expected by chance alone. Nor were these differences in the hypothesized direction: all three of the significant differences favored the control group, but the non-significant differences were almost randomly distributed between the two groups, some comparisons favoring the experimental group, some favoring the control group, with no apparent pattern of changes emerging. A subsidiary analysis of major errors found in the compositions was the only analysis to show promise: although only one of the nine comparisons showed statistically significant differences, all comparisons favored the experimental group. On the other hand, significant positive correlations between the reading and both the quality and productivity measures (but not the T-unit or syntactic density measures) suggest that some common basis for the two skills exists, confirming findings of a number of previous studies.[2] Statistically significant interactions between the treatment and the sex of the subject on 5 of the 36 comparisons (about 14 percent) suggest that the sex of the subject might have had some minor influence on the results.

TABLE 4

QUALITY MEASURE: STATISTICAL DECISIONS FOLLOWED BY MEAN PRE-POST CHANGES BY GRADE AND TREATMENT

Statistical Data

	n	df	F-ratio	Probability	Decision
Grade 9	36	1	0.593	.45	N.S.
Grade 10	36	1	1.658	.21	N.S.

Mean Changes

		Pretest		Posttest		Posttest Minus Pretest
	n	$\bar{x}$	σ	$\bar{x}$	σ	
Grade 9 Exp	18	5.64	1.13	5.42	1.29	-0.22
Grade 9 Con	18	5.41	1.88	5.66	1.80	+0.25
Grade 10 Exp	18	5.90	1.34	5.31	1.60	-0.59
Grade 10 Con	18	6.16	1.31	5.79	1.64	-0.37

Table 4 presents the six-month comparison on the writing quality measure for the grade-nine and grade-ten groups separately. Inspection of Table 4 reveals no statistically significant differences between the experimental and control groups on either the grade-nine or grade-ten levels over the six months of the experiment. Examination of the data shows that small changes in quality scores favored the control groups on both grade levels. These data simply continue a trend observed on the three-month comparison: small, positive changes on the measure favored the control groups. On the grade-ten level there was a significant ($p<.02$) interaction between the treatment and the sex of the subject, an interaction attributed to compositions written by three control girls who scored below the mean on the pretest but above the mean on both the mid- and posttests. This must be regarded as spurious in light of the large number of interactions tested. There was no statistically significant interaction between the treatment and the ability of the subject.[3]

Table 5 reveals no statistically significant differences between the experimental and control groups on the syntactic density measure on either the grade-nine or grade-ten levels. Over the six months of the experiment, small changes in the syntactic density scores favored the experimental groups. These data are at variance with trends observed in the first three months of the experiment where equally small and statistically non-significant differences favored the control groups. The grade-level conversion scale accompanying the SDS shows that a year's growth is approximately .8 points, suggesting that the differences reported above of .2 points maximum are quite minor. Nor did any pattern emerge on the pre-mid, mid-post, or pre-post comparisons to suggest that delayed improvement on the SDS measure might be expected.

TABLE 5

SYNTACTIC DENSITY MEASURE: STATISTICAL DECISIONS FOLLOWED BY MEAN PRE-POST CHANGES BY GRADE AND TREATMENT

Statistical Data

	n	df	F-ratio	Probability	Decision
Grade 9	48	1	0.704	.41	N.S.
Grade 10	48	1	0.672	.42	N.S.

Mean Changes

		Pretest		Posttest		Posttest Minus Pretest
	n	$\bar{x}$	σ	$\bar{x}$	σ	
Gr. 9 Exp	24	3.51	.67	3.54	.74	+.03
Gr. 9 Con	24	3.70	.74	3.50	.96	-.20
Gr. 10 Exp	24	3.64	.90	3.87	.79	+.23
Gr. 10 Con	24	3.78	1.25	3.88	.87	+.10

TABLE 6

T-UNIT MEASURE: STATISTICAL DECISIONS FOLLOWED BY MEAN PRE-POST CHANGES BY GRADE AND TREATMENT

Statistical Data

	n	df	F-ratio	Probability	Decision
Gr. 9	103	1	.286	.59	N.S.
Gr. 10	91	1	2.202	.14	N.S.

Mean Changes

		Pretest		Posttest		Posttest Minus Pretest
	n	$\bar{x}$		$\bar{x}$		
Gr. 9 Exp	50	13.97	2.84	14.45	2.78	+.48
Gr. 9 Con	53	14.51	2.70	14.81	3.09	+.32
Gr. 10 Exp	44	15.62	3.11	14.99	3.31	-.63
Gr. 10 Con	47	14.87	3.24	14.91	3.37	+.04

Table 6 reveals no statistically significant differences between the experimental and control groups on the T-unit measure over the six months of the experiment. On the grade-nine level, small differences favored the experimental group while on the grade-ten level, somewhat larger but statistically non-significant differences favored the control groups. The comparison between the two groups over the first three months showed a significant treatment effect: The grade-ten control group was significantly better ($p<.04$) than the experimental group as a result of "losses" experienced by the experimental group. Such "losses" might well result from the fact that the experimental group wrote T-units almost one full word longer than those written by the control group on the pretest. There was also a significant ($p<.02$) interaction between the treatment and the sex of the subject on both the first-three-month and full-six-month comparisons, an interaction attributed largely to the work of three grade-ten control girls whose papers improved dramatically following the pretest.

TABLE 7

PRODUCTIVITY MEASURE: STATISTICAL DECISIONS FOLLOWED BY MEAN PRE-POST CHANGES BY GRADE AND TREATMENT

Statistical Data

	n	df	F-ratio	Prob	Decision
Gr. 9	103	1	.668	.42	N.S.
Gr. 10	91	1	.126	.72	N.S.

Mean Changes

	Pretest			Posttest		Posttest minus Pretest
	n	$\bar{x}$	σ	$\bar{x}$	σ	
Gr. 9 Exp	50	245.4	96.5	213.1	90.4	-32.3
Gr. 9 Con	53	266.9	80.3	231.0	68.5	-35.9
Gr. 10 Exp	43	280.1	102.6	256.5	85.2	-23.6
Gr. 10 Con	47	274.6	113.2	256.9	114.8	-17.7

Table 7 presents the six-month comparison on the productivity measure. There were no significant differences at either grade level in the length of the compositions written by the experimental and control groups over the six months of the experiment. Inspection of the raw scores shows that slight differences favored the experimental group on the grade-nine level and the control group on the grade-ten level. On the first three-month comparison, substantial but statistically non-significant differences averaging 27 words per composition favored the experimental groups on both the grade-nine and grade-ten levels, differences which evaporated by the end of six months. All groups wrote shorter posttests than pretests, a phenomenon, as noted above, which may be attributable to the attitude of the students in June.

As Table 8 shows, there were no significant differences between experimental and control groups in reducing major errors at either grade level. However, in both grades, differences favored the experimental groups. Interestingly, very slight dif-

ferences over the first three months favored the control groups on both grade levels while much more substantial (albeit statistically non-significant) differences over the final three months favored the experimental groups. It should also be noted that significant differences were not hypothesized here because these conventions of standard usage were assumed to be taught or induced over a long period of time. While no further inference is warranted, these differences between the experimental and control groups come closer than any others in the study to showing the hypothesized but uncorroborated influence of reading skill on writing skill.

TABLE 8

ERROR REDUCTION: t-TEST RESULTS FOLLOWED BY MEAN PRE-POST CHANGES BY GRADE AND TREATMENT

t-tests

	df	Experimental Minus Control	t	Probability	Decision
Gr. 9	34	-0.34	-1.024	.40	N.S.
Gr. 10	34	-0.60	-1.677	.20	N.S.

Mean Changes

		Pretest		Posttest		Posttest minus Pretest
	n	$\bar{x}$	σ	$\bar{x}$	σ	
Gr. 9 Exp	18	0.95	0.59	0.60	0.64	-0.35
Gr. 9 Con	18	1.19	0.88	1.18	0.77	-0.01
Gr. 10 Exp	18	1.45	1.40	0.99	1.06	-0.46
Gr. 10 Con	18	0.83	0.81	0.97	1.19	+0.14

TABLE 9

CORRELATIONS BETWEEN THE READING AND THE FOUR WRITING MEASURES AT THE THREE TEST PERIODS WITH SEPARATE CALCULATIONS FOR THE BOYS AND THE GIRLS ON THE QUALITY AND PRODUCTIVITY MEASURES

WRITING MEASURES		READING MEASURE					
		Pretest		Midtest		Posttest	
	n	r	prob	r	prob	r	prob
Quality	72	.47	.0001	.54	.0001	.48	.0001
Syntactic Density	96	.02	.82	.07	.51	.09	.34
T-unit length	194	.06	.43	.08	.28	.09	.19
Productivity	194	.20	.004	.19	.008	.27	.0001
Quality (Boys)	33	.35	.05	.33	.06	.37	.03
Quality (Girls)	39	.57	.0001	.70	.0001	.59	.0001
Productivity (Boys)	100	.26	.01	.15	.13	.36	.0001
Productivity (Girls)	94	.15	.14	.22	.03	.17	.10

As Table 9 shows, the highest correlations observed for the total sample were between the reading and quality measures. These moderately high correlation coefficients, ranging from .47 to .54 were significant beyond the .0001 level of confidence. The productivity measure also correlated significantly ($p<.008$) with the reading measure, but the correlation coefficients were low (.19 to .27). The correlations between the reading and the syntactic density or T-unit measures, on the other hand, were all very small, none with a correlation coefficient reaching .10.

Table 9 also shows that correlations between reading and quality measures were much higher for the girls in the study than for the boys. Correlation coefficients for the girls ranged from .57 to .70 ($p<.0001$) while those for boys ranged from .33 ($p>.05$) to .37 ($p<.05$). This supports earlier data reported by Fishco (1966) who found that correlations between reading and writing measures for the girls in his study were significant beyond the .01 level of confidence, but those for the boys did not reach the .05 level of confidence. On the other hand, on the productivity measure, the correlations for the boys were generally somewhat higher than those for the girls. This may well result from a small number of poor male writers who wrote very short papers.

TABLE 10

RANKINGS OF THE GRADE 9 AND 10 EXPERIMENTAL AND CONTROL BOYS AND GIRLS ON THE INITIAL READING AND WRITING QUALITY MEASURES

	Grade 9		Grade 10	
	Writing Quality Rank	Reading Rank	Writing Quality Rank	Reading Quality Rank
Exp Boys	1	4	4	3
Exp Girls	4	3	1	4
Con Boys	2	1	2	2
Con Girls	3	2	3	1

As Table 10 shows, when the grade-nine and grade-ten experimental and control boys and girls are ranked on the pre-reading and pre-writing quality measures, a group's rank on one measure can be used to predict its rank on the other measure in only one of the eight possibilities.[4] While in some cases there were only small differences in actual scores between two rankings, in other cases the differences were substantial. The grade-ten experimental girls, for example, scored almost one standard deviation below the control girls on the initial reading measure, yet one standard deviation above the control girls on the initial writing quality measure. Nor does this appear to be an anomaly of testing as the experimental girls maintained the high-quality and low-reading scores on both the mid- and posttests. The grade-nine experimental boys showed a similar profile, scoring one-half standard deviation below the grade-nine mean on the initial reading measure and one-half standard deviation above the mean on the writing measure, also maintaining this profile on the mid- and posttests. Comparative rankings for the reading and the other three writing measures are substantially the same as those reported in Table 10. Although such group rankings are crude comparisons, they suggest that the moderately high correlations ranging from .47 to .70 reported above may be

misleading. The correlations imply that skill in one area will be accompanied by skill in the other. The rankings, on the other hand, show that when class-sized groups are examined, the best writers are not necessarily the best readers—indeed, as a group, they seldom are. These findings corroborate Loban's (1963) observation that many students were good at one skill but poor at the other. For example, in Loban's study one-quarter of the highest fourth-grade readers were inferior or illiterate writers while one-third of the poorest writers were good or superior readers. He found similar patterns at other grade levels.

Discussion

This study could find no evidence that reading skill has a direct influence on writing skill. Statistically significant and substantial improvement on the reading measure, improvement which was spread evenly among the grade nines and grade tens and the boys and girls in the study, improvement which was most evident in the first three months of the study and which continued to increase slightly over the second three months, appeared to exert no influence on the compositions written by the students when these compositions were examined for overall quality, syntactic density, T-unit length, or productivity. With the exception of improvement in editorial usage which generally favored the experimental groups non-significantly, improvements in compositions were randomly distributed between the experimental and control students. Correlational data suggested low to moderate relationships between the two skills, but ranking groups of students on reading and writing scores showed no relationships between the two. This lack of evidence flies in the face of a good deal of previous correlational and descriptive data, a strong prima-facie case for a relationship, and over two centuries of theory and speculation.

Failure to prove that there is a causative relationship between reading and writing skills is not the same as proving there is no relationship—it cannot be said that measurable change in reading skill *does not* produce measurable change in writing skill; it can be said only that under the conditions outlined in the current experiment, improvement in reading skill *did not* lead to improvement in writing performance. The complete lack of support for the hypotheses in this study, however, raises serious questions about the entire line of research of which it forms a part. Because virtually no changes in writing performance accompanied the changes in reading skill, it does not appear likely that reading change will lead to any automatic change in writing performance.

Nor can the results of this study be taken to discount the widely held belief that wide reading will improve writing skill. This thesis, too, has a good prima-facie case: wide reading brings one into contact with both the more complex structures and the more sophisticated vocabulary of the written dialect. As Veal (1975) points out, writing is, after all, book-talk and one learns book-talk through reading. On the other hand, while studies by Heys (1962) and DeVries (1970) appeared to offer empirical promise for the notion that wide reading improved writing, a carefully controlled five-year study by Elley, Barham, Lamb, and Wyllie (1976) found only small and statistically non-significant advantages at the end of the first year and no advantage thereafter for a group which had two hours of free reading per week in place of two different kinds of grammar instruction offered to other groups.

A certain sterility has marked the research that investigates the potentially dynamic relationship between reading and writing—and the study reported here

shares this disappointing and frustrating character. A few concluding comments about this general line of research may be in order.

The situation is perhaps not quite so bleak as Stotsky (1983) paints it in a recent review of the whole area of reading-writing relationships: "Almost all studies that sought to improve writing through reading instruction were ineffective." Only two studies lay recent claim to having improved reading as stage one of a study directed at the improvement of writing as stage two. These are Matt's study (1977), and the one reported here. Matt did not use standard measures, and neither study succeeded in improving writing. Because the entire line of research remains baffling—in the specific sense that a classic situation prevails where there is substantial correlation but no evidence of a causal relation—there is some risk of undue pessimism unless the issue is kept very precise. Most of the May 1983 issue of *Language Arts*, for instance, is taken up with the question of reading/writing relationships, but there is no shred of hard evidence in it that reading improvement can produce writing improvement. Yet everyone knows, in spite of the lack of evidence, that this almost has to be the case.

What then is wrong with the research? First, very little of it has sought to answer the direct experimental question. Stotsky's (1983) reference to "almost all the studies" is misleading, inasmuch as there have apparently been only two studies in the past 38 years (since Mathews, Larsen, and Butler in 1945) that met the necessary first stage in the experiment—reading improvement—and only eight altogether that even aimed at the question (Belanger, 1978b, p. 73).

Second, none of the three studies (including Mathews) that in fact improved reading as the first step to improving writing dealt adequately with what seems, on reflection, to be the crucial issue of why anyone writes in the first place. The current study assumed that if reading were improved, writing would also automatically improve. But writing is never an "automatic" process. Reading can to some extent intrude itself on a reluctant recipient, as when one sees a sign that says "Danger—road closed." But writing is never automatic in this sense. Therefore, the present study, and the others in the same vein, have been unrealistic in their failure to provide some active incentive for the students to write. In the present study this failure was reflected in the reduced average length of papers on the pre-post comparison. The students knew much better than the researchers that there was, in fact, no persuasive reason for them to write at all on any of the three occasions. Therefore, no real test of writing competence or skill was provided.

The reading treatment may have improved their capacity to write or it may not. But simply telling the students to write the third of three trivial papers without meaningful preparation, audience, or reward is slim evidence indeed of what the students could have done. This sort of purposeless writing has been the hallmark of writing research, and we should all have known better. None of us would dream of writing seriously for the slim rewards we have offered to students in our experiments.

Either reading does not affect writing—which continues to seem most unlikely in the face of the celebrated correlations between the two—or future research will have to abandon the naive assumption that students will go to the daunting effort of writing their best simply to make our experiments come out productively. If students are to write well, the writing will certainly have to be meaningful to them in the first place, and they will have to receive the extrinsic rewards (grades, praise, audience, the possibility of publication, etc.) that are necessary to drive the rest of us to our writing desks. Short of this, serious writing will simply not occur.

Notes

1. To indicate if the subjects chosen for the quality and Syntactic Density Score analyses were representative of the sample population, the initial reading scores of the subjects in these subsamples were compared with those of the subjects in the remainder of the classes. Use of t-tests revealed that differences between the sample and subsamples did not reach the .05 level of confidence, the probabilities falling between .70 and .99.
2. Because of the paucity of evidence supporting the hypotheses of the investigation, only summaries of the findings on the four major and one subsidiary analysis are presented here. An in-depth analysis and discussion of all 36 null hypotheses can be found in the original document (ED 163 409, pp. 265-347).
3. The apparent anomaly of students "losing" quality over the six months can be at least partially attributed to the attitude of some high school students to written work in June: school "officially" continued until June 28 but unofficially appeared to end before June 1. See also concluding comments.
4. The pretest, of course, is unaltered by the treatment. Therefore, one might expect any natural relationships between reading skill and writing skill to be most obvious here.

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The Alberta Journal of Educational Research *Vol. XXX, No. 3, September, 1984, 213-225*

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The Relationship Between Academic Achievement, Self-Concept, Creativity, and Teacher Expectations Among Native Children in a Northern Manitoba School

There is a dearth of empirical evidence pertaining to Native learners in northern Manitoba communities, especially with respect to significant variables, namely academic achievement, self-concept, creativity, and teacher expectations. In this study, the researchers focused on determining whether significant positive relationships existed among these variables with a grade three class of twenty-two children, a grade four class of nineteen children, and with the total group of forty-one children in grades three and four combined. To measure the variables the following instruments were used: for academic achievement, the CTBS; for self-concept, the Michigan State General Self-Concept of Ability; for teacher expectation, the Teacher Rating of Pupil Attitude Scale; and for creativity, the Torrance Tests of Creative Thinking. Significant positive correlations beyond the .05 level, ranging from .35 to .61, were found for grades three and four among self-concept, academic achievement, and teacher expectations. Only one significant positive correlation was discovered (.38) for creativity and teacher expectations. Support for the phenomena of age-grade deceleration and academic retardation with increasing age was discovered. Recommendations for ameliorating the unsatisfactory condition were made and further cross-validation study was suggested.

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There is much research evidence to suggest that academic achievement correlates positively with self-concept (Brookover, Schweiter, Beady, Flood, & Wisembaker, 1976; Caplin, 1969; Purkey, 1970; Stipek & Hoffman, 1980), creativity (Getzels & Jackson, 1962; Guilford, 1968, 1977; Schempp, 1981) and teacher expectations (Braun, 1977; Brophy & Good, 1970; Cooper, 1979; Good & Brophy, 1977; Rosenthal & Jacobson, 1968). However, previous research has not investigated these relationships with Native Indian children. This study sought to examine the interrelationships between academic achievement, self-concept, creativity, and teacher expectations among Native students in a small elementary school, in a Northern Manitoba community.

Empirical evidence pertaining to the relationships among these important variables will serve to clarify the nature of these concepts, namely academic achievement, teacher expectations, self-concept, and creativity. In turn, knowledge generated about these will extend educators' understanding and insight which will eventually result in the improvement of instructional sequencing and management. Hopefully, academic deceleration and retardation of Native children will decline.

Background

There is a dearth of research pertaining to academic achievement involving Native children, in particular as related to children's self-concept, creativity, and teacher expectations. However, research findings from studies involving non-Native subjects suggest high positive inter-correlations among these variables, and these may have implications for the education of Native children.

Self-Concept

Self-concept, broadly defined, is a person's perceptions of himself/herself. These perceptions are formed through one's experience with and interpretations of one's environment, and are influenced especially by reinforcements, evaluations by significant others, and one's attributions for one's own behavior (Shavelson, Hubner, & Stanton, 1976).

Considerable research evidence exists to suggest a relationship between self-concept and academic achievement. Hansford and Hattie (1982) used meta-analysis to examine the relationship between various self measures and measures of performance and achievement; the statistical results of 128 studies were transformed into a common measure, correlation coefficients. The studies represented a total sample of 202,823 persons and produced a data base of 1,136 correlations between self-ratings and performance measures. A range in the relationship of -.77 to .96 was reported with an "average" correlation of .21. It was found that this average relationship was modified by a number of variables which included: grade-level of subjects, socioeconomic status, ethnicity, ability of subjects, and type of performance/achievement measures.

Self-concept changes may be regarded as a change of attitude towards the subject and not a change in academic ability. At the elementary level, if a positive attitude towards learning can be fostered in students, it seems likely that a positive self-concept of ability would result. Research conducted with Indian children in Northern communities (Kirkness, 1978; Lenton, 1979) has shown that there is an age-grade retardation that begins at grade one and tends to increase as Indian students progress through school. Since academic achievement has been found to correlate positively with self-concept (Brookover, et al., 1976; Caplin, 1969; Stipek &

Hoffman, 1980) it might be assumed that as the Indian child progresses through the school, his/her self-concept and academic achievement would tend to decrease simultaneously.

Many researchers (Alvord & Glass, 1974; Bacher, 1965; Deo & Sharma, 1970) have investigated the relationship between academic achievement and self-concept at the secondary level. At the secondary level, however, the individual has probably already associated his/her self-concept of ability with his/her success or failure in that subject area. Hence, this research focused on the early elementary years for Native Indian children. As suggested by Beaird (1965), if low self-concept can be identified and found to be related to academic achievement during the early elementary years, then attempts can be made to enhance the individual's self-concept of ability. This may alter his/her attitude to education before he/she becomes a potential failure or dropout.

Creativity

There appears to be a low positive relationship between creativity and academic achievement (Getzels & Jackson, 1962; Guilford, 1968; Torrance, 1965). Torrance's (1965) research suggested that low correlation occurred because the top twenty percent of subjects who scored high on measures of intelligence were not the top twenty percent of the subjects who scored high on measures of creativity. According to Guilford (1968), traditional intelligence tests tended to require convergent thinking while creativity required divergent thinking.

The uncertainty and lack of consensus about the essence of creativity and the lack of success in deriving a satisfactory operational definition constitute a fundamental problem, particularly with respect to measurement. Definitional disagreement persists. For example, creativity has been defined as an ability involving fluency, flexibility, and originality (Guilford, 1959), as the forming of associative elements into new combinations (Mednick, 1962), as a novel product (Stein, 1968), as moments of sudden, surprising insight (Bruner, 1962; Piaget, 1971), and as the process of bringing something new into existence (Johnson & Johnson, 1975). There is also disagreement on whether it is an inherited trait or a process anyone can learn (Johnson, 1979). Studies, such as this one, continue the search for greater understanding and relatedness which will help in firming up a more widely acceptable definition.

Results of studies suggest that the most creative children are not necessarily the most intelligent nor are they those who score best on achievement tests. Children of lower-class income groups have been found to be more creative than children from middle-class income groups (Gezi, 1969). Since most Native Indian children come from a low-income group, they may be generally creative; further, Torrance's (1965) and Guilford's (1968) findings suggest that the more creative Native children may not necessarily be the top achievers.

Teacher Expectations

According to Schmuck and Schmuck (1983), an interpersonal expectation is a prediction of how another person will behave in a particular social setting, and may develop through the individual's own personality structure, his/her generalized images of what the other person is like, or as a result of specific reactions perceived to be coming from the other (p. 68). The effects of teachers' expectations on students have been found to reflect what has been described as the "self-fulfilling prophecy,"

which occurs when a "false" definition of a situation evokes a new behavior which makes the originally "false" conception come true (Schmuck & Schmuck, 1983, p. 90).

The classic study by Rosenthal and Jacobson (1968) demonstrated that a teacher's expectation of his/her pupils' intellectual competence can serve as an educational self-fulfilling prophecy. Although Rosenthal and Jacobson's research has been severely criticized for its methodology and statistical analysis, follow-up research (Brophy & Good, 1970; Cooper, 1979; Good & Brophy, 1977; Rist, 1970) has found evidence to support the contention that teachers' expectations affect teacher behavior toward the student, student behavior, and student achievement. According to Schmuck and Schmuck (1983), such reviews/researches leave little doubt that the expectations of teachers have important and real effects on students. Teachers' expectations appear to influence achievement, self-esteem, and the satisfaction of students (p. 94).

Rist (1970) found that teacher expectation was influenced by the socio-economic status of the students; subjects from lower socio-economic backgrounds tended to be placed into lower curriculum tracks. Since most Native Indian children tend to come from a lower-class income group, teacher expectation may be an important variable in influencing both the self-concept and the academic achievement of Indian children. Studies by Brookover, Erickson, and Joiner (1967) and Clifton (1972) have found that teacher expectation influences students' self-concept. The relationship between teacher expectation, self-concept, and academic achievement appears to be an intimate one.

The Problem

Research is needed to determine the relationships among the variables of academic achievement, self-concept, teacher expectation, and creativity of elementary-level Native Indian children in a school in a Northern Manitoba community. The term "Native" refers to Canadians of aboriginal descent and can include status and non-status Indians, Inuit, and Metis.

The basic question is, to what extent do these variables relate to each other? On the evidence of previous research, high positive inter-correlations should exist between teacher expectation, self-concept of ability, and academic achievement. The relationships among these variables and creativity should be less striking.

Significance of the Problem

Age-grade retardation and progressive academic deceleration associated with increasing age for Native children have been recorded in the research literature. More information about the nature of academic achievement and its related variables is needed in order to provide greater understanding, insights, and clues about ways in which academic achievement of Native children could be facilitated. Such information could be useful in removing misconceptions, furnishing hope and optimism, and forming a scientific and objective basis for meaningful intervention. This study is aimed at generating much-needed information about academic achievement with respect to Native children. The results of the study can serve as a useful starting point for a much larger study. Information generated could prove to be helpful to both pre-service and in-service teachers of Native children.

More specifically, professors of teacher education should ensure that all in-service and pre-service teachers are aware of the basic research findings concerning the

development of a negative self-concept. Attention should also be given to the trap of low teacher expectations of their students, and the stifling of creativity by teacher behavior.

Method

Population and Sample

The study was carried out in a school situated in Northern Manitoba, about 900 miles from Winnipeg. There were 189 students enrolled at the school with a staff of 14 teachers, including two teacher aides. Ninety-seven percent of the school population were Cree speaking, hence English was a second language for most students. The remoteness of the community, lack of recreational facilities, and lack of professional personnel, might allow the community to be seen as a disadvantaged environment for both the Euro-Canadians and the Indians.

The subjects of the study were 22 students of grade three (12 boys and 10 girls) and 19 students of grade four (7 boys and 12 girls), together with the respective classroom teachers. These 41 subjects were chosen because the teachers were willing to permit them to participate.

The Instruments

A Measure of Academic Achievement. Academic achievement was measured by the Canadian Test of Basic Skills (CTBS), Form 3, Levels 9-14, (1976). These tests are designed to assess levels of skills development in reading, vocabulary, the mechanics of written language, methods of study, and mathematics for students in grades three to eight. Reliability for the CTBS varies from test to test and from grade to grade. Internal consistency reliability coefficients range from .87 to .96, while composite reliability ranges from .97 to .98 for all grades (CTBS Manual, 1982). Kuder-Richardson (K-R21) reliability coefficients were calculated for use in this research; coefficients of .89 and .41 were obtained for grades three and four, respectively. The low reliability at grade four was probably due to the small number of subjects and the narrow range of marks.

Eleven subtests generated five scores; three for Language Arts, and one each for Mathematics and Work Study Skills. Academic Achievement was represented by the composite scores obtained from these five scores.

A Measure of Creativity. Creativity was measured by the Torrance Test of Creative Thinking (TTCT), Thinking Creatively with Pictures (Figural Tests, Forms A and B) (1966). The TTCT was designed to measure four aspects of "creative thinking"—fluency, flexibility, originality, and elaboration. The two forms of this test, A and B, include three activities: 1) picture construction activity, yielding scores for elaboration and originality; 2) incomplete figures activity, and 3) repeated figures activity, each providing scores for fluency, flexibility, originality, and elaboration. Creativity was measured by the accumulated score on the above four abilities. Test-retest reliabilities for the TTCT range from .50 to .93 over one to two-week periods, and from .35 to .73 over three-year periods (Buros, 1972). Reliability coefficients obtained for this study were: 1) Spearman-Brown reliability coefficients, .82 and .94 for grades three and four respectively; and 2) K-R21 reliability coefficients, .95 and .97, respectively.

A Measure of Self-Concept of Ability. The Michigan State General Self-Concept of Ability Scale (SCA) was used as a measure of self-concept. Other scores used were: the Perceived Parental Evaluation of Ability (PPEV), the Perceived

Friends' Evaluation of Ability (PFEV), and Perceived Teachers' Evaluation of Ability (PTEV). These scales determine the effects of a student's perceptions of his academic ability as seen by significant others—parents, friends, and teachers. A high numerical score on these scales represents a more positive self-concept, while a lower score represents a less positive self-concept.

The Hoyt's analysis of variance reliability coefficients of the SCA range from .77 to .88 for grade seven through grade twelve, while reliability for the PPEV, PFEV, and PTEV range from .75 to .92 (Brookover et al., 1967, p. 61). Spearman-Brown reliability coefficients calculated for this research were .87 and .84 for grades three and four respectively, while K-R21 reliability coefficients were .96 and .91 respectively.

A Measure of Teacher Expectation. The Teacher Rating of Pupil Attitude Scale (TRPA) developed at the Tennessee Technology University (1969), assessed teacher expectation of students' attitudes and ability in academic achievement and creativity. The TRPA required teachers to respond to sixteen questions. The TRPA was considered an appropriate measuring instrument for this research because it was originally designed for use with culturally disadvantaged children and minority groups who had enrichment programs to develop their creative expressions and self-concept, and this study involved the academic achievement, self-concept, and creativity of subjects from a similar background. Reliability coefficients for the TRPA are not available, but K-R21 reliability coefficients estimated for this study were .83 and .93 for grades three and four, respectively.

Administration and Scoring

All the tests were administered in accordance with the developers' specified directions. The CTBS was administered over a four-day period in both grades three and four classrooms. Each of the four testing sessions lasted from 65 to 80 minutes. The TTCT was administered in the week following the testing on the CTBS. The TTCT Figure Tests, Form A and Form B, were administered on separate days. The SCA, PPEV, PFEV and PTEV were administered on the same day; while the TRPA was done by the classroom teachers during the final week of the school year. For each student four scores were computed: one each for academic achievement, self-concept, creativity, and teacher expectation.

Results and Discussion

Twenty-two sets of scores were computed for grade three students and nineteen sets for grade four students. Data were analyzed descriptively (means, standard deviations, correlation coefficients) for each grade according to sex, and all the children as a single group. Pearson product moment correlations were computed to examine the relationships between pairs of variables. Scores were analyzed using the ST32 computer program run on the AMDAHL 470/V7 computer at the University of Manitoba. Tests of statistical significance were conducted at the .05 level.

Table 1 summarizes the means and standard deviations of scores on each variable: self-concept, creativity, teacher expectation, and academic achievement. Except for sex differences in creativity, none of the differences between pairs of means for the four variables were found to be statistically significant. Boys appeared to perform more creatively than girls (303.74 vs. 297.26).

It is interesting to note that grades three and four, generally speaking, had approximately the same means and standard deviations on all the variables with

slight exceptions. For example, grade four scored only about five points more on self-concept than grade three. Table 1 shows the grade three mean for self-concept to be 88.68 and grade four 93.11. Only the grade three creativity mean was higher than the grade four creativity mean. On all other variables the means for grade four were higher and were substantially so for academic achievement: 131.42 for grade four and 126.59 for grade three.

TABLE 1

MEANS AND STANDARD DEVIATION OF SCORES ON SELF-CONCEPT, CREATIVITY, TEACHER EXPECTATION, AND ACADEMIC ACHIEVEMENT FOR ALL THE SUBJECTS AS A GROUP, FOR EACH GRADE LEVEL AND WHEN GROUPED BY SEX

TESTS	GRADE				
	3 & 4 (N=41)	3 (N=22)	4 (N=19)	3 & 4 Boys (N=22)	3 & 4 Girls (N=19)
Self-Concept					
Mean	90.73	88.68	93.11	89.68	91.96
S.D.	14.55	15.99	12.69	17.70	10.10
Creativity					
Mean	303.15	304.45	301.63	303.73	297.26
S.D.	88.59	78.49	103.17	75.04	111.23
Teacher Expectation					
Mean	59.71	58.86	60.68	60.55	58.74
S.D.	10.86	9.12	12.78	10.69	11.27
Academic Achievement					
Mean	128.83	126.59	131.42	131.41	125.84
S.D.	22.27	28.31	12.38	18.08	26.51

However, these mean academic achievement scores of the grade three (126.59) and four (131.42) subjects were below their grade equivalents when transformed to the norms of the CTBS: 2.5 vs. 3.9 or greater, a difference of 1.4 for grade three subjects; and 2.6 vs. 4.9 or greater, a difference of 2.3 for grade four subjects. Since the academic achievement test was administered towards the end of the school year, these results tend to support previous research findings attesting to an age-grade deceleration in achievement for Native children in Canada (Kirkness, 1978; Lenton, 1979).

Table 2 provides a summary of the inter-correlations found among the four variables. Significant positive correlations were found between: 1) self-concept and teacher expectation for the total sample and for boys; 2) self-concept and academic achievement across all grade levels and for both sexes; 3) creativity and teacher ex-

pectation and academic achievement across all groups. In general, there was a low correlation between creativity and academic achievement for boys, and the relationship was negative. Correlations between self-concept and creativity were generally low; in most cases, the relationship was negative.

TABLE 2

SUMMARY OF INTER-CORRELATIONS AMONG THE FOUR VARIABLES

VARIABLES	GRADE				
	3 & 4 (N=41)	3 (N=22)	4 (N=19)	3 & 4 Boys (N=22)	3 & 4 Girls (N=19) [a]
Self-Concept and Creativity	-.01	-.07	.06	-.11	.09
Self-Concept and Teacher Expectation	.35	.36	.35	.46	.21
Self-Concept and Academic Achievement	.48	.51	.43	.61	.48
Creativity and Teacher Expectation	.19	.38	.08	-.04	.29
Creativity and Academic Achievement	.08	.11	.06	-.14	.19
Teacher Expectation and Academic Achievement	.50	.64	.45	.52	.49

[a] Number in parentheses indicate the number of subjects who completed all the tests.

Note: Coefficients underlined indicate correlations significant beyond .05 level.

Certain limitations related to the instruments and the definitions of variables used should be noted when interpreting the results of this research. Measurement of self-concept was limited to twenty-three statements which could be understood by subjects. These statements may comprise only a small segment of an individual's total self-concept of ability. Further, only aspects of creativity which could be expressed by pictures were measured.

Academic achievement was limited to achievement in three subject areas—Language Arts, Mathematics, and Work Study Skills, which may not be sufficient to make a generalized statement of the subjects' total achievement. However, since these subject areas form the basis for the other subject areas, data on these subjects may still provide a fair assessment of academic achievement.

Finally, only sixteen statements concerning the teacher's expectations of a student's attitude and performance were employed in this research. It seems doubtful that these statements covered every aspect of the teacher's expectations.

On the basis of the findings of this research, one may conclude that Native children at the grades three and four level who possess a high self-concept of ability, and for whom teachers hold high expectations, also tend to be high achievers. These findings support previous research attesting to positive relationships between academic achievement and self-concept (Brookover, et al., 1976; Caplin, 1969; Hansford & Hattie, 1982), and academic achievement and teacher expectation (Braun, 1977; Brophy & Good, 1970; Rosenthal & Jacobson, 1968). The self-concept of Native children also appears to be highly correlated with teacher expectation, supporting conclusions by Brookover et al. (1967) and Clifton (1972). The high achievers among Native students at the grades three and four level were not necessarily the most creative, as evidenced by the low correlation between academic achievement and creativity; in some cases, the relationship appears to be negative.

Recommendations

Discovering repeatedly that age-grade deceleration and academic retardation exist in Native learners, or for that matter, among any learners, should not be construed as an end in itself. Possible ways of resolving the problem should also be identified so that steps might be taken to ameliorate this vexing condition, which results in social injustices and inequality in opportunities for learners. Some of the recommendations that follow might be helpful.

1. Professors of education and teacher trainers should bring to the attention of in-service and pre-service teachers of Native learners the need to be open toward the learning potential of these children rather than stereotyping them as low achievers and somehow communicating low expectations to them either explicitly or through subtle gestures. The available research should be made known and discussed in spite of its limitations and weaknesses.

2. The school and teachers of any community cannot and should not accept the total responsibility for the all-round educational development of Native learners. The education of culturally different or disadvantaged learners should be a team effort, including the family, the community, the church, the media and all those models who come into contact with the learner in his/her formative years.

Educating the culturally different or disadvantaged has become an increasingly paramount issue over the last fifteen years. The Native learners in this study live in, and are educated in, an isolated northern community. They do not come into contact with many of the economic and social privileges that are recognized to be the "carriers" of the salient ingredients that could unlock their potential ability. Home, environmental and school factors have often been cited as influential determinants of school achievement. For example, Score and Weinburg (1976) have mentioned a good home environment, opportunities for language and number skills at home, and a concentrated environmental enrichment as being imperatives for the offsetting of cultural disadvantage. Stone and Nielsen (1982) have identified such crucial extra-school variables as library facilities, books and periodicals, learning supplies (including auto-instructional devices), social support, opportunities for enlarging vocabulary, and exposure to models of good language usage. For school factors, deliberate efforts have to be made to accommodate children during the transitional periods of acculturation, and a careful study of the dynamics and inter-play of the variables involved in school learning is essential.

3. Admittedly, the phenomena of self-concept, teacher expectations, and creativity seem to be concomitants of academic achievement and intellectual growth. Per-

haps a strong desire to resolve the problem of academic retardation could result in educators attacking the condition directly. Such remediation would include considerations for learner entry behaviors, identification of precise behavioral objectives, prescriptive teaching, continual monitoring, and measurement. Undoubtedly, these competencies demand specialized training and education of teachers of Native learners.

There is no shortage of exemplary individualized programs that could prove to be very helpful. Houston (1974) has suggested a competency-based program encompassing precise objectives, performance criteria instructions pertinent to the criteria, and learner accountability in terms of the criteria. Davies (1973) has developed performance-based activity packages as part of a teacher's design to achieve pre-determined learning outcomes through appropriately planned individualization of instruction. Gilstrap and Martin (1975) have recommended drill and practice to ensure specific instructional outcomes and obtain increasing student interest and enjoyment. An alternative approach, suggested by Blackie (1967), seems quite plausible for Native learners. Among other things, Blackie prescribed provisions for individualized approaches through a variety of methods and organizational patterns. He placed emphasis on learners making observable gains and improving their self-management through the manipulation of concrete materials and interaction with each other as well as with the teacher.

Other reinforcement-based programs such as precise teaching (Johnson, 1971), precision teaching (Sprinthall & Sprinthall, 1981), mastery learning (Bloom, 1974), criterion-referenced teaching (Popham, 1973), diagnostic and prescriptive teaching and programming (Stellern, Vasa, & Little, 1976; Woolfolk & McCune-Nicolich, 1984), and DISTAR (Engelman, et al., 1975) have incorporated excellent features of high quality instruction, customized especially for children with special needs. The principles underlying these programs are essentially successful and corrective experiences (Glasser, 1969). Others such as Glaser (1962), Gronlund (1973), Hartman (1975), and Airisian (1971) have specified prescriptions for designing instruction systematically to ensure success and corrective experiences.

4. For greater validity and generalization, further research seems necessary. A more elaborate study should be designed that would focus on a larger group of Native learners, probably in more than one community, and a white Euro-Canadian group of learners. In the meantime, serious consideration should be given to the results of this study in order to avert continued growth of the problem.

Failure to take action may result in the continued increase of social injustices, inequalities of opportunities, potential for racial conflict and disharmonies, and finally a denigrating economic dependence. William Glasser (1969) has stated in his book *Schools Without Failure* that lack of success in schools result in children becoming lonely, delinquent, worthless, and coming to feel that they are not loved. They are separated from the world of the successful by a thick wall. Perhaps, this thick wall for the Native learners is a school system with teachers who don't expect them to do well, who thus help them to experience a low self-concept, who may squelch their creativity, and finally produce academic failure.

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The Alberta Journal of Educational Research *Vol. XXX, No. 3, September, 1984, 226-237*

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Prospective Teachers: Views of Programs and Needs

Practising Alberta educators were asked to assist in identifying societal and educational trends and to assess their impact on the future role of the teacher. In a second study prospective teachers at the University of Alberta were asked: (1) to give their opinions with respect to the identified societal and educational trends, and (2) to respond in terms of their professional preparation programs as to how well they were being prepared for the identified changes in the role of the teacher in the future.

Less than half of the prospective teachers (42 percent) felt adequately prepared to cope with identified societal changes but 54 percent thought that they would be able to adjust to the changing educational context. While 71 percent of the student group perceived their own abilities as "above average" in comparison to their peers, only 30 percent of students would rate their preparation programs as better than "adequate."

Students would place a heavy emphasis on the practicum component of their preparation programs. However, reliance on student opinion is a necessary input but not sufficient guide to improvement in teacher education programs; other considerations as well must be weighed in developing program modifications.

Public schools are clearly servants of their societies. By extension then, it could be argued that teacher preparation institutions are also directed by that same society's views. Teacher preparation programs are largely designed to fit teachers into the existing public education reality. As the society changes, a concurrent necessity is adjustment in, or adaptation of, teacher preparation programs.

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Changes in the broad societal context—such as the changes in family structure, the technological imperatives of the information society and the economic downturn—are affecting all educational institutions (Toffler, 1981; Bernstein, 1983; Gold, 1983). The public school does not remain unaffected by changes in this larger environment for these forces impinge upon the immediate educational context and demand adjustment. At a time when public confidence in educational institutions seems to be decreasing (Bakalis, 1983) it becomes increasingly necessary for educational institutions to be responsive to pressures for change and to the many publics they purport to serve.

As social change becomes more obvious, reform demands directed at the school begin to surface (Gideonse, 1982; Goodlad, 1982). As these demands become the popular voice, pressures are generated to change the operations of the educational system. These demands are the articulation of a perceived need.

Changes in the educational context may be essentially complete within themselves or may simply foreshadow events not yet on the horizon of education. The degree to which potential changes are seen as "future" is an important judgement since it determines the perceived need for action as contrasted with reflection.

A defined future requires action but attempting to extrapolate from the present in order to predict and plan for a long-term future is probably unproductive. Experience has already underlined our limited ability to calculate the unforeseen variables and the unanticipated events which influence the future (Ravitch, 1983; Apple, 1983). It is nonetheless true that the antecedents of the future do lie in today's decisions. The forces which will influence future conditions are being generated today.

There is certainly a case to be made for viewing the future as "now" with respect to the apparent immediacy of threats to education. Indeed it may not truly be possible to separate a set of "now" activities from a set of "future" activities. Anyone involved with teacher preparation will recognize the inevitable time lag between the start of a new program and the graduating class.

In a society which has become accustomed to an accelerated pace of social change, the intervening time period which separates a present set of conditions from a future set of conditions has become relatively brief (Moore, 1963); indeed any such separation of time may be simply illusionary (Toffler, 1981). This represents a severe shortening of available time to identify problems and pose alternative solutions. Such a viewpoint leads naturally to concerns about decisions and changes now that are important in their own rights and not simply as temporary expedients.

Concentration upon "now" problems is at least an acceptable, and may possibly be the only, effective tactic available to educators. With this mind-set, an examination of the current context for education and the potential threats to its status as an important societal institution becomes highly relevant. Such analyses will not eliminate all threats but they might enable educators to re-examine the resources which are now available to them and affirm their present use or plan to redeploy these resources in a more effective fashion.

Changes in the societal context first reveal themselves as trends, but the early detection of trends is a difficult task. In the very early stages a trend is that which is agreed to be so. Once agreement has been reached that a trend exists, the stance which educators may take in response to an identified trend can vary from acquiescence to assertiveness. Whatever the stance taken it is more likely to be effective if

it is taken deliberately. A deliberate position is dependent upon a trend having reached an acceptable level of agreement and clarity.

Methodology

An important question is the degree to which teacher education programs are keeping pace with—or perhaps staying ahead of—social and educational change. To initially explore this question it was first necessary to identify some of the now apparent trends and assess their impact upon the teacher role. Senior undergraduate students then considered how their preparation programs were attending to these emerging needs.

A recent study undertook to gain information upon trends affecting education from two groups. In a preliminary questionnaire study in the Spring of 1983, the purpose was to ask practising educators in Alberta to assist in identifying (1) societal trends, (2) educational trends, and (3) matters impacting on the role of the teacher (Bumbarger & Nixon, 1983). This identification of trends by practitioners was seen as, first, an important element in attempting to overcome the attitudinal separation which exists between educational researchers and educational practitioners (Foster & Nixon, 1978; Levin, 1982) and second, a starting place from which to seek the views of prospective teachers with respect to the existence of these trends and their perceived ability to accommodate to them. Figure 1 is organized under three headings and lists the changing factors that were identified by Alberta educators.

Of primary concern to the teacher educator is the degree to which present preparation programs are a preparation for the dynamic conditions summarized in Figure 1. Ideally programs should be kept in accord with both prevailing societal norms and changing expectations.

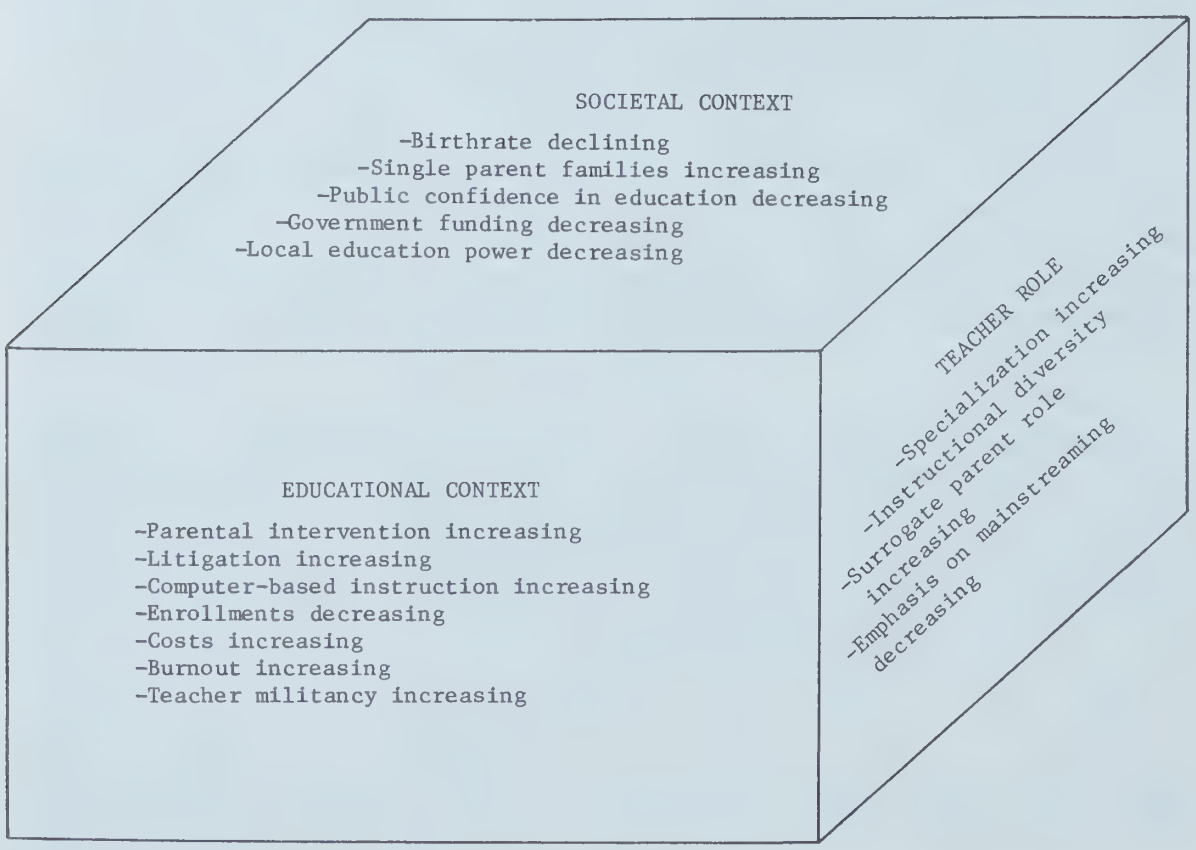

Figure 1. Teacher 'Reading' of the Future

Recognizing that the basic preparation for a teacher is at least four years in length there is clearly the need to be prepared to change the development process even while this basic pre-service preparation is undertaken. Change within courses and change which adds or deletes course work may be necessary but may not be sufficient if the change is needed at the program level.

In a second study at the University of Alberta in January, 1984 senior undergraduates were asked: (1) to give their opinions with respect to the identified trends in the societal and educational context which they saw as increasing/decreasing in impact over the next few years, and (2) to respond in terms of their professional programs as to how well they were being prepared for the identified changes in the role of the teacher (Figure 1).

Data Collection

The data for the educator study were collected as an integral part of a meeting entitled "Role of the Teacher of the Future Conference," held in Edmonton, Alberta, May 12 to 14, 1983. The questionnaire design was developed to provide a pre-conference measure matched with an immediate post-conference measure enabling comparison of pre- and post-test scores for each individual. For this paper pre-conference responses of all registrants (280) were utilized.

Data for the prospective teacher study were collected by means of questionnaires distributed to all students enrolled in the Winter Term, 1984 in the class Educational Administration 401 at the University of Alberta. Of the 530 questionnaires which were distributed a total of 476 completed questionnaires were returned.

Findings and Discussion

Societal Context

Using a Likert-type (5-1) scale, students were asked to respond to the same items asked of practising educators: "Some societal trends may already be discernible. Respond to the following items in terms of where events now happening in society seem to be heading." In Table 1 are the statements of societal trends and the responses of educators and students who thought they would increase/decrease.

TABLE 1

PERCENTAGE OF EDUCATORS AND STUDENTS WHO THINK SOCIETAL TRENDS WILL INCREASE/DECREASE

	Educators			Students		
	N	I	D	N	I	D
The birthrate	257	29.6	45.5	473	28.8	41.0
Number of single parent families	265	86.8	5.7	476	90.8	2.5
Public confidence in education	266	16.5	44.0	476	24.2	26.3
Government support for education	265	11.7	52.8	476	25.8	31.7
Local decision power in education	266	31.6	45.9	476	42.0	20.4

(Increase is indicated by the letter I and decrease by the letter D.) The percentage of respondents who indicated "no change" is not shown in the table. About 93 percent of students could detect change with respect to single parent families but only about half (46 percent) could foresee any change in public confidence in education.

When the educator group mean score responses for these items were compared with the mean scores of students, responses to three items were significantly different: public confidence in education, government support for education, and local decision power in education (Table 2). (Note that these depend more upon opinion than do the other two items.) Educators, perhaps because of increased age and/or increased experience, were more pessimistic in their views than the prospective teachers. However, when the students were asked, "As a prospective teacher, do you think you are being adequately prepared to cope with changes in the societal context as you see them?" less than half (42 percent) felt adequately prepared.

TABLE 2

COMPARISON OF MEAN SCORES OF EDUCATORS AND STUDENTS ON SOCIETAL TRENDS

	Educator			Student				
	N	mean	s.d.	N	mean	s.d.	t-value	Probability of t
The birthrate	257	2.76	1.22	473	2.84	0.96	-0.97	0.334
Number of single parent families	265	4.15	0.80	476	4.20	0.68	-0.90	0.368
Public confidence in education	266	2.67	0.92	476	2.97	0.81	-4.40	0.000 **
Government support for education	265	2.53	0.84	476	2.93	0.87	-6.06	0.000 **
Local decision power in education	266	2.83	1.02	476	3.25	0.87	-5.93	0.000 **

** significant at the .01 level

Likert-type scale 5 - 1; 5 indicated Increase and 1 Decrease

Some of the students who considered themselves "adequately prepared" attributed this to the program (e.g., course work in sociology, psychology) but another view was that the "ability to cope" was self-determined.

> I think whether we can cope with future change in the societal context depends most on our individual attitudes toward change.
>
> Not by the program—perhaps on our own.

Of those students who felt less prepared to adapt to societal change, one expressed view was on the limitations of any program.

> No school can adequately prepare a person for something that they will only learn how to handle with experience.
>
> . . . you can never be fully prepared. One must learn something as one goes.

A more common tendency, however, was to assign "blame" for lack of preparation and to suggest one or more remedies.

> We are not being prepared for many of the changes which will occur in the near future. We need more instruction in new programs—reading, computers, math.
>
> We have not had sufficient instruction in social/economic/political influences on education. Nor have we had sufficient dialogue in problems and suggested solutions.

Educational Context

The procedures used to elicit views on societal trends were again used to seek the perceptions of participants with respect to educational trends. The statements of educational trends and the responses of educators and students who thought that they would increase/decrease are given in Table 3.

TABLE 3

PERCENTAGE OF EDUCATORS AND STUDENTS WHO THINK EDUCATIONAL TRENDS WILL INCREASE/DECREASE

	Educators			Students		
	N	I	D	N	I	D
Parental intervention	266	72.9	8.6	476	72.3	6.7
Recourse to litigation	262	67.6	3.1	456	45.4	3.1
Computer-based instruction	267	92.5	0.7	476	95.6	0.6
Enrolments	266	27.1	41.0	471	32.7	30.8
Costs	267	91.4	3.0	474	93.0	0.8
Teacher burnout	265	79.6	2.3	474	68.8	4.4
Teacher militancy	265	61.9	9.4	471	42.7	16.6

More than 90 percent of students predicted that computer-based instruction would increase as would education costs; 72 percent foresaw an increase in parental intervention; and 69 percent thought that the incidence of teacher burnout would increase. On five of the educational trends the responses given by students were significantly different from those given by educators: (1) recourse to litigation, (2) computer-based instruction, (3) enrolments, (4) teacher burnout, and (5) teacher militancy (Table 4).

TABLE 4

COMPARISONS OF MEAN SCORES OF EDUCATORS AND STUDENTS ON EDUCATIONAL TRENDS

	Educator			Student				Probability
	N	mean	s.d.	N	mean	s.d.	t-value	of t
Parental intervention	266	3.78	0.83	476	3.75	0.73	0.49	0.624
Recourse to litigation	262	3.79	0.75	456	3.47	0.64	5.77	0.000**
Computer-based instruction	267	4.36	0.66	476	4.49	0.60	-2.64	0.009**
Enrolments	266	2.86	1.04	471	3.07	0.94	-2.75	0.006**
Costs	267	4.30	0.74	474	4.32	0.63	-0.38	0.701
Teacher burnout	265	4.15	0.81	474	3.86	0.82	4.64	0.000**
Teacher militancy	265	3.71	0.92	471	3.34	0.91	5.41	0.000**

** significant at the .01 level
Likert-type scale 5 - 1; 5 indicated Increase and 1 Decrease

Students were more likely than educators to foresee increases in computer-based instruction and education costs, but educators were more likely than students to foresee increases in teacher burnout, teacher militancy and recourse to litigation. Again these differences might be explained by students' inexperience of the "real world" of teaching and/or the optimism of youth.

When students were asked if their preparation programs were adequately preparing them for these changes in the educational context there was less pessimism than was the case with respect to changes in the societal context. More than half the students (54 percent) thought that they were receiving adequate preparation in order to cope with forthcoming changes in education. Reflective of students' comments who saw themselves as adequately prepared were the following:

> Many changes in the educational context are brought to the prospective teacher's attention.
>
> We are introduced to new teaching programs at university.
>
> I am better prepared for educational change than societal change.
>
> Preparation more adequately deals with educational concerns.

However, for the sizable minority who felt less satisfied with their teacher preparation there were many concerns but the perceived lack of computer literacy was the one concern which received the highest number of comments. Some students were angered by the lack of computer courses available to them and many made the case for compulsory computer courses.

> I resent the fact that I will have to know how to use computers to teach; yet, the university does not deal with it.
>
> We are not prepared to work with computers. A computer course should be compulsory.
>
> Few courses which fit into my very "prescribed" program deal with technological advances, e.g., computers.

Other concerns which were voiced included mainstreaming, "outdated" course content and irrelevancy of some aspects of the program, but no other respondent was as badly off as the student who wrote, "I am so unprepared, I don't even know what you mean by educational context."

Impact on the Teacher Role

Both practising educators and prospective teachers were asked whether they agreed/disagreed that a number of identified factors in the environment would make an impact on the role of the teacher. A 5 point Likert-type scale was again employed with 5 or 4 being used to indicate agreement and 2 or 1 to indicate disagreement. The identified factors and the responses of educators and students who agreed/disagreed that they would have an impact on the role of the teacher are presented in Table 5. Sixty percent of students agreed that teachers would increasingly take on a surrogate parent role but there was no marked apprehension that the other factors would make any major impact on the role of the teacher; subject specialists would still be required and the emphasis on a variety of instructional modes would not decrease. When the mean scores of students were compared with those of educators there were some differences. Educators were more inclined than students to emphasize both the role of the teacher as a surrogate parent and the continued need for diverse instructional modes (Table 6).

TABLE 5

PERCENTAGE OF EDUCATORS AND STUDENTS WHO AGREE/DISAGREE ON THE FUTURE IMPACT ON ROLE OF THE TEACHER

	Educators			Students		
	N	A	D	N	A	D
Technological advances will reduce the need for subject specialists	267	16.5	73.8	475	14.3	67.4
Decreased emphasis on diverse modes of instruction	261	12.3	69.3	472	12.5	60.4
Teachers will increasingly find it necessary to act as surrogate parents	265	71.3	11.3	476	58.8	14.1
Concerns for efficiency will override the social goals implicit in mainstreaming	263	44.9	21.3	474	37.3	25.7

TABLE 6

COMPARISON OF MEAN SCORES OF EDUCATORS AND STUDENTS: IMPACT ON TEACHER ROLE

	Educator			Student				Probability
	N	mean	s.d.	N	mean	s.d.	t-value	of t
Technological advances will reduce the need for subject specialists	267	2.17	1.11	475	2.27	0.99	-1.26	0.208
Decreased emphasis on diverse modes of instruction	261	2.22	1.03	472	2.38	0.92	-1.99	0.047*
Teachers will increasingly find it necessary to act as surrogate parents	265	3.80	0.98	476	3.57	0.93	3.29	0.001**
Concerns for efficiency will override the social goals implicit in mainstreaming	263	3.29	0.98	474	3.14	0.91	2.09	0.037*

*significant at the .05 level
**significant at the .01 level

Likert-type scale 5 -1; 5 indicated Strongly Agree and 1 Strongly Disagree

Anticipating the Future

By and large students did not suffer from inadequacies of self-image. In comparison with their peers they were confident in their personal abilities but they were less confident in the abilities of teacher educators to provide them with programs which enhanced these abilities (Table 7). On a 5-point scale students were asked to rate their abilities/personal attributes as future educators "in comparison to others in the teacher education program." Fifty-two students (11 percent) rated themselves "outstanding" and another 275 students (60 percent) considered themselves "above average." Teacher education programs did not fare as well; 5 students

(1 percent) considered their programs "excellent" and 134 students (29 percent) rated them "above average."

TABLE 7

STUDENTS' SELF RATINGS OF ABILITY
AND RATINGS OF TEACHER PREPARATION PROGRAM

		Excellent				Adequate				Poor			
		5		4		3		2		1		Total	
Self Rating		N	%	N	%	N	%	N	%	N	%	N	%
1	Outstanding	2	3.8	19	36.5	19	36.5	5	9.6	7	13.5	52	100.0
2		1	0.4	86	31.3	129	46.9	53	19.3	6	2.2	275	100.0
3	Average	2	1.9	24	22.2	52	48.1	29	26.9	1	0.9	108	100.0
4		0	0.0	5	20.8	11	45.8	6	25.0	2	8.3	24	100.0
5	Poor	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total		5	1.1	134	29.2	211	46.0	93	20.3	16	3.5	459	100.0

The concerns of many students with respect to their preparation programs were of a practical nature. Certain educational trends such as increased computer based instruction in the schools have become apparent but many students felt that they were less competent in this area than they would like to be. Of the 367 students who felt a need beyond the program requirements for further course work, most chose to elaborate on their responses. While courses were sought by individuals on just about every aspect of teacher preparation—from classroom management to knowledge of the content in disciplines related to their majors/minors—84 (almost one-quarter) specified a need for computer courses. In a much smaller number of cases it was thought that more courses might help dispel feelings of apprehension that they were unprepared in a general way for their future as educators.

> I want to take as many good courses as I can.
>
> I do not, for some reason, feel very confident about teaching. Maybe a few more courses would give me more information so creating more confidence.
>
> I have not received what I would call a liberal education. I am not educated and therefore not qualified to teach.

Student responses to the question, "When you have completed your professional program and (with a little good luck) have obtained the position of your choice, what aspects of your present program will probably prove most useful to you?" have been summarized in Table 8. Over 90 percent considered the practicum valuable but there was much less agreement with respect to the other program components. Fifty-six percent of students understood the relevancy of curriculum and instruction courses even though these were not always popular. As one student wrote:

> As much as I hated the C. & I. courses and as much as I thought they could have been a lot better, I think they were still useful.

Education courses (other than curriculum and instruction) and courses outside of the Faculty were much more open to question. The following view was a rare one:

> More emphasis should be put on subject material. Background is necessary to instruction.

TABLE 8

ASPECTS OF PROGRAM CONSIDERED RELEVANT TO FIRST POSITION

	B.Ed. (Elem) (N=325)		B.Ed. (Sec) (N=112)		B.Ed. (Ind/Voc) (N=32)		Total (N=469)	
	N	%	N	%	N	%	N	%
Practicum	314	96.6	96	85.7	23	71.9	433	92.3
C & I courses	198	60.9	55	49.1	9	28.1	262	55.9
Other education courses	110	33.8	19	17.0	11	34.4	140	29.9
Courses outside the Faculty of Education related to major/minor	65	20.0	64	57.1	16	50.0	145	30.9
Other	28	8.6	8	7.1	2	6.3	38	8.1

Includes 22 B.Ed. (Elem) After Degree Students
Includes 14 B.Ed. (Sec) After Degree Students
Includes 2 B.Ed. (Ind/Voc) After Degree Students

The view of the student who wrote, "You need the theory but experience is much more relevant" was the most prevalent and was expressed in a variety of ways.

> We need more practicum!
>
> More CI courses and more practicum.
>
> I think more time should be spent on practical experiences. I learn a lot more through practical experiences than reading books.
>
> I don't feel I was fully prepared for life in the classroom from courses. Much information was gathered during my practicum.

Most students agreed that there will be a need to update their preparation on a continuing basis (Table 9) but there is some evidence that they feel that their present preparation could be improved. However, the emphasis which students would place on the overriding importance of the practicum may well be misplaced. Overemphasis on the practicum will not only be a step into the past (Dickie, 1983; Patterson, 1982) with its attendant temptation to internalize "by practice" someone else's program/curriculum/mythologies, but this approach chains one to a static view of teaching. Stated differently, unless there now exists an ideal-teacher model which can be presented for emulation, thoughtful and creative change efforts have to be applied to current formulations. Given that such a model did exist, preoccupation with practicum experiences would still be a vote for the status quo.

A teacher preparation program is made up of a number of course concentrations. Universities usually rely on the judgement of those individual instructors who offer these courses to define the content and to be aware of its relevance to the present and future needs of students. In turn, instructors rely on the feedback from students with respect to the adequacy/relevancy of the material presented. This may not be a sufficient data source but it is often the only data source utilized since courses are evaluated and modified much more often than are entire programs.

TABLE 9

STUDENTS' SELF-REPORTED NEED BY PROGRAM
FOR PROFESSIONAL UPDATING

		B.Ed. (Elem)		B.Ed. (Sec)		B.Ed. (Ind/Voc)		Total	
		N	%	N	%	N	%	N	%
5	Essential	226	69.5	74	66.7	23	71.9	323	69.0
4		82	25.2	26	23.4	9	28.1	117	25.0
3		14	4.3	7	6.3	0	0.0	21	4.5
2		3	0.9	3	2.7	0	0.0	6	1.3
1	Not essential at all	0	0.0	1	0.9	0	0.0	1	0.2
Total		325	100.0	111	100.0	32	100.0	168	100.0

Includes 22 B.Ed. (Elem) After Degree Students
Includes 14 B.Ed. (Sec) After Degree Students
Includes 2 B.Ed. (Ind/Voc) After Degree Students

Students are one data source in the assessment of programs but other sources which should be considered include graduates of particular programs, school district personnel, and teachers' associations. Graduates may well view their preparation programs differently than do students. For example, it is possible that over time the importance attributed to the practicum experience decreases and the relevance of the other program components to the practitioner becomes clearer. District personnel with responsibilities for hiring may not be able to evaluate the differences among teacher education programs but they are likely to be able to offer projections with respect to the need for teachers with particular specializations. Professional associations can monitor teachers' needs for in-service and professional renewal. If Faculties of Education are to provide programs which are forward looking, the cooperative nature of the teacher education task must be understood (Nixon & Bumbarger, 1983).

There has been much written and said about change and its inevitability as well as its increasing pace. Perhaps it is time to reconceptualize what we mean by change—and adaptations to it that can be made. A major restructuring of teacher education programs based on some vision of the role of the teacher in the twenty-first century is neither feasible nor necessary. Students in education programs are future teachers but their preparation is now. All that can reasonably be expected is that we provide students with skills and knowledge to meet presently identifiable changes in the role of the teacher. If this argument is accepted, then the future is now and the responsibility to change to meet it is now.

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Errata: The publication of the paper, *Recollections about the life of the first Ukrainian settlers in Canada*, by W. A. Czumer, listed on page 86 of the March, 1984 issue of the journal was incorrectly attributed to the University of Toronto. The paper was published by The Canadian Institute of Ukrainian Studies, University of Alberta, Edmonton, Alberta.

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